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A MOROCCAN MODEL OF COLLECTIVE INTELLIGENCE:

The Commission spéciale sur le modèle de développement (CSMD)

EVALUATION REPORT - DECEMBER 2021

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اللجنة الخاصة بالنموذج التنموي
LA COMMISSION SPÉCIALE SUR LE MODÈLE DE DÉVELOPPEMENT

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TABLE OF CONTENTS

EXECUTIVE SUMMARY

On 16 December 2019, the Honorable Chakib Benmoussa, then Morocco's ambassador to France, gathered 35 fellow citizens in a conference room at the Royal Academy in the leafy outskirts of Rabat. The three dozen members of the *Commission spéciale sur le modèle de développement* (CSMD) had been selected for their scientific, economic and political expertise, as well as eminence in the cultural and non-profit sectors. The Commission's mandate, given by King Mohammed VI, was a daunting one. Morocco's economic growth, strong in the early 2000s, had slowed; job creation in the formal sector was anemic; rising environmental stress was deepening regional inequalities, as the government struggled to deliver high-quality public services to all parts of the country.

The CSMD's challenge was to propose a new model of development for Morocco, recentered on citizens and their needs. But how to hold a conversation with 36 million people? How to weigh all the needs, aspirations, and ideas of their fellow citizens, not to mention the diverse opinions of the commissioners themselves? Chakib Benmoussa, Morocco's ambassador to France and president of the new Commission, issued a challenge to his colleagues: "our method will be collective intelligence."

Collective intelligence (CI) describes the ability of groups to outperform individuals in learning, decision-making, and problem-solving, among other cognitive challenges. It is an ability that has defined our species, from collectively hunting animals far stronger than us, to discovering and distributing an MRNA vaccine. In the face of a common challenge, many minds join together to accomplish what even the most talented individual could not do alone. A complex, fast-changing environment has conditioned us to collaborate, but collective intelligence doesn't just happen: a group must be organized in the right way, with the right tools for the task at hand. Crowds can be stupid as well as smart, and too often our own habits and institutions stand in the way.

What governments are discovering is that collective intelligence methods bring two critical sources of value to the public sphere. First, as problems grow in complexity, collective intelligence can provide faster, more creative, and more accurate solutions. From prediction markets to crowdsourced data-gathering, CI methods can help governments define and react to public problems more effectively. The drivers of quality in these processes include scale, cognitive diversity, engagement quality, and impact. Secondly, the crisis of declining trust in institutions and increasing polarization creates an urgent need for new forms of public collaboration. Studies have shown a wide range of positive effects of these processes: on individual empathy, critical thinking, and confidence; on alignment around shared goals; on trust and respect for institutions; and on tolerance across political and social divides.[1] Moreover, collective intelligence creates a new discourse of public engagement that moves beyond debates over whether a country should "modernize" or "democratize". All human societies have the potential for collective intelligence, and each can tap into it in its own way, true to its traditions and attentive to its particular needs.

To harness the collective intelligence of the Moroccan people, the CSMD made three principal design choices for its work. First, it created multiple consultation channels combining "open" and "targeted" forms of outreach. In-person workshops, hearings, and field visits with a range of stakeholders were complemented by an online platform, CSMD.ma, and social media channels inviting contributions from the general public. These contributions were solicited in three phases: an agenda-setting phase, a co-construction phase, and a "refinement" phase during which final recommendations were decided. Citizen input through these channels were synthesized by CSMD staff to inform the internal deliberations of the Commission in weekly plenary sessions and four thematic working groups.

1 See Appendix, section 4.

The second design choice was to maximize diversity of contributions by three techniques: soliciting ideas from the widest range of organizations in a given sector (e.g. political parties, trade unions, and universities), regardless of ideology; applying selection filters for the *rencontres citoyennes* ("citizen meetings") to promote equal participation by gender, age, and geography; and organizing field visits in all of Morocco's 12 regions to hear from populations, especially those in rural areas, least likely to participate through other channels. A series of deliberative workshops based on sortition was planned but not implemented. The third and final design choice was to create an iterative planning process with periodic self-evaluations, with the option of creating new channels or calls for participation based on learnings in the first two phases.

From January to December 2020, the CSMD received over 10,000 written pages of contributions from 6,600 individuals and 165 organizations. Through organized consultation activities (in-person and virtual), Commission members interacted directly with 9,700 Moroccan citizens. These activities included five *rencontres citoyennes*,[2] 30 field visits, 70 hearings, 113 expert workshops, 25 *conférences labellisées*,[3] an online platform with 50,000 unique visitors, and a social media campaign reaching an estimated 3.2 million citizens. The two main impacts of the covid-19 crisis were the extension of the CSMD's mandate from July to December 2020, and the imperative to hold virtual rather than in-person events. Recognizing that an online-only approach would reduce diversity of contributions, the CSMD issued three new calls for citizen contributions -- targeting high-school and university students, and prison detainees -- and organized three workshops with youth on culture and economic opportunity.

From this unprecedented national initiative, three main learnings emerged. First, citizens expressed frustration with what they perceived as *la panne de l'ascenseur social*: a sharp decline in social and economic mobility, especially for the young and those living far from urban centers. Second, citizens expressed grave disappointment in the performance of the public sector. Of special concern were the failures of the education system, the insufficiencies of the social safety net, an inefficient bureaucracy, and the continued prevalence of corruption and rent-seeking among those exercising power. Alongside these frustrations, however, citizens presented hundreds of examples of local projects and initiatives that had shown promise in reinventing educational models, creating jobs, advancing gender equality, and protecting natural resources under stress. Above all, Moroccan citizens expressed pride in their country and a keen appetite to participate in public life. As one young woman put it, "If citizens are not engaged, if they are not involved in public debates and decisions, all change will be in vain."

The keyword of Morocco's new development model is "participation." The CSMD's report, delivered to King Mohammed VI in December 2020, proposes five development objectives for the nation, and identifies four systemic knots (*noeuds*) to unravel as well as four strategic axes of transformation, 72 concrete propositions, and five levers for system-wide change. Development is defined as "a global and multidimensional process that goes beyond the sole objective of accumulating material wealth," but that requires stable and open institutions that "give to each individual the means and capacities to affirm themselves, liberate their energies, forge their destiny and choose their path."

Did the CSMD's collective intelligence methods work? In the most basic sense, yes -- the Commission successfully oversaw the most sophisticated public consultation in Morocco's history, earned broad participation from a diverse body of citizens, and put their concerns front and center in its final recommendations. A critical element of this success was the coherence of the CSMD's actions with its values; the diligence, transparency and openness of its 35 members give a shining example of the principles proclaimed in the new model. Though their internal deliberations may have benefited from more time and facilitation, the report these deliberations produced is impressively clear, comprehensive, and ambitious.

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2 Town-hall meetings with open calls for participation; see Part B, Section 3.
3 Independent events organized with participation of a CSMD member; see Part B, Section 3.

Were these citizen voices numerous and diverse enough? Though the social media campaign may have reached several million Moroccans, only 2270 ended up contributing via the online platform.[4] Conversely, CSMD's in-person methods created a very rich stream of citizen feedback, sadly truncated by the covid-19 pandemic. Methods that integrated storytelling in small groups were considered especially successful. In terms of diversity, the CSMD's multi-stakeholder approach may have given undue weight to those who already enjoyed access to the system; on the other hand, creating buy-in from these stakeholders was a critical element in the Commission's theory of change. Overall, the CSMD appears to have achieved its goals of hearing voices from every region in Morocco, and made special efforts to hear from less-favored groups, including a workshop organized with sufferers of drug addiction, a workshop with unemployed youth, and a call for contribution from prison detainees. As a whole this outreach was effective in validating the key findings of the agenda-setting phase, which while critical of the status quo were more consensual than anticipated. On the other hand, a deliberative exercise based on truly random sampling would have expanded this circle of voices still wider, unmediated by organizational filters; for Moroccan public actors seeking to implement the new model, such an exercise could be an important method to pioneer.

On the indicators of scale, diversity, and engagement quality, then, the CSMD largely succeeded in bringing the collective intelligence of their fellow citizens to bear. For the fourth and final indicator, impact, the coming months will provide a crucial test. Will the nation's leaders take active steps to transform a "culture of conformity" within their institutions into a "culture of leadership, initiative and performance"?[5] Will citizen expertise be sincerely valued and thoughtfully integrated into public decisions? Will sufficient resources be invested in building new competencies, platforms and processes? These are the questions that will determine whether Morocco's new model of development, so painstakingly created, will achieve its promise. The daring spirit and diligence of these 36 commissioners, and the creativity of the thousands who participated, give reason to hope.

4 The platform had approximately 50,000 unique visitors during this period.
5 CSMD Report, ##.

WHO THIS REPORT IS FOR

- **For anyone interested in Morocco specifically, or in economic or human development broadly,** this report tells the story of the CSMD and the role of collective intelligence in producing a new development model for the nation in 2020-21.
- **For public sector actors seeking to use collective intelligence to solve public problems,** this report provides state-of-the-art scientific insights and real-world examples of CI for public good in Morocco and around the world.
- **For citizens and organizations who want to understand collective intelligence,** this report gives an overview of tools and practical methods that can be adopted both with and without government support, as well as arguments that can be used to advocate for citizen participation and help these processes realize their potential.

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INTRODUCTION: WHY DO GOVERNMENTS NEED COLLECTIVE INTELLIGENCE?

To govern effectively in this century is to confront problems of mounting complexity, scale, and speed. To take an example near at hand, taming a global pandemic in an age of rapid mobility is a problem of many dimensions: scientific, economic, behavioral, logistical, among others. No single domain can supply the needed answers, and ideas produced in silos are unlikely to work. Moreover, implementing solutions requires broad participation and social trust; to lower infection rates, aid the vulnerable, and stave off economic disaster, citizens must themselves take action and rely on others to do so. As governments have increasingly discovered, a public challenge that encompasses these two dimensions -- high complexity and broad social impact -- are precisely those in which top-down solutions will fail. Collective intelligence is needed.

Collective intelligence (CI) describes the ability of groups to outperform individuals in learning, decision-making, and problem-solving. It is an evolutionary adaptation common to many species: ants, honeybees, and spider monkeys all use collective intelligence to survive. Humans are unique, though, in that our collective intelligence depends largely on culture -- the person-to-person transfer of human-generated knowledge, rules, and behaviors.[6] Each generation has the capacity to refine the tools and methods it inherited, and invent new ones at greater scales. The practice of medicine, for example, evolved from locally contained folk traditions to medieval reference libraries to vast networks of laboratories and hospitals that can produce and distribute a life-saving vaccine in record time. In this, the integrated knowledge of the entire network is greater than that of any member.[7] Honeybees can use collective intelligence to build exquisite hives, and even make "democratic" decisions on where to put them,[8] but they could not create and improve a public health system. Our collective intelligence, therefore, reflects a natural capacity to collaborate that emerges in early childhood, enhanced by the equally natural drive to refine and reinvent.[9] Successful societies are those that learn how to preserve the intelligence bequeathed to them and imagine new ways to expand it.

The science of collective intelligence explores the mechanisms behind these collaborations and the conditions by which they succeed. Collective intelligence studies have grown rapidly in the past two decades to encompass a range of disciplines, from cognitive science and complex systems to political science, management science, and international development, among others.[10] New research centers and networks of expert practitioners are studying how CI can tackle urgent and complex public problems.[11] Founded in June 2019, the UM6P School of Collective Intelligence, based in Ben Guérir, Morocco, offers the world's first accredited postgraduate programs in collective intelligence, and has launched the first research programs in CI on the African continent. As a global pandemic demands new and better forms of collaboration, the field of CI continues to grow in breadth and reach.

This note is divided into three sections. The first section presents the "why" of collective intelligence, its two main value propositions to citizens and government, and a survey of what CI can bring to each phase of the policymaking cycle. The second section presents the case of Morocco's *Commission*

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6 See Henrich 2018; Sapolsky 2017.
7 See O'Madagain 2018.
8 See Seeley 2010; Conradt and Roper 2003.
9 See Winters 2020.
10 See, e.g., Mulgan 2017; Malone and Bernstein 2015; Yu et al. 2018. A peer-reviewed journal dedicated to collective intelligence has recently been launched, see https://us.sagepub.com/en-us/nam/collective-intelligence/journal203713.
11 Prominent examples include the NYU Governance Lab (The GovLab), MIT Center for Collective Intelligence, NESTA Centre for Collective Intelligence Design, World Bank Open Government Unit, newDemocracy Foundation, Santa Fe Institute's Collective Computation Group, the Collective Intelligence Group at the IT University of Copenhagen, the Max Planck Institute for Human Development, and the OECD Innovative Citizen Participation Project.

spéciale sur le modèle de développement (CSMD) and the CI methods it put into place. The third section gives the results from the 12 months of the CSMD's work, and proposes lessons for the "Moroccan model of collective intelligence" as it continues to take shape. A scientific annex goes further into the design principles for CI, examining four key indicators that can determine the success or failure of group intelligence in the public sphere.

A. THE CASE FOR COLLECTIVE INTELLIGENCE: COMPLEXITY AND TRUST

Creating a new model of national development bears the hallmarks of a highly complex problem. First, it is a problem of multiple dimensions, including legal, budgetary, educational and social challenges. Furthermore, these dimensions are interdependent, such that changed conditions of one can impact others. Finally, our information about them is often partial, ambiguous, or rapidly changing. National development, in short, is too complex a challenge for any individual brain; rather, it requires an entire community to think effectively together.

The use of collective intelligence (CI) offers twofold value to policymakers:

- **Value proposition #1: CI generates higher-quality solutions to complex problems.**
- **Value proposition #2: CI strengthens the legitimacy of public decisions, and promotes trust and well-being in society as a whole.**

We may think of the first value proposition as the **technical dimension** of a collective intelligence problem: how do we assemble the right forms of expertise to produce the optimal set of solutions? Open innovation platforms, prediction markets, civic hackathons, community surveys, and deliberative polls work by aggregating the dispersed knowledge of many citizens to generate solutions to public problems. Among many other useful skills, human beings are prediction machines: we draw on a wide range of past and present information when making intuitive judgments. This unique ability is one of many capacities that have not been embedded effectively as a strategic resource for governments. When designed well, CI methods can produce insights and predictions that are both faster and more reliable than those which include only a circumscribed elite.

The second value proposition gives the **social dimension** of a collective intelligence problem: how do we design a process that favors individual and collective learning, builds trust, and renews a community's identity and purpose? When Aristotle posited that humans are the "political animal," he meant not that we delight in power games, but rather that we develop our gifts most fully by participating in public life. This would not seem to be a widespread fact of political life today: according to Pew Research, an average of 64% of people across 34 countries do not believe that elected officials care what ordinary citizens think.[12] This ancient idea that participation in a community is fundamental to our well-being has recently been echoed by political theorists[13] and evolutionary historians[14] alike. At a time where much public discourse consists of partisan shouting, a deliberative forum like a citizen's

12 Wike and Schumacher 2020.
13 See, e.g., Sen 1999; Pettit 2001; Nussbaum 2011.
14 See, e.g., Henrich 2018.

assembly brings together people of different views and backgrounds in a way that favors collaboration over division. Citizens who had thought of politics as useless and corrupt develop a new view of public life, one in which they can see themselves.[15] In processes like these, trust among citizens, and between citizens and government, is given space to take hold.[16]

As public problems grow in complexity, so does the importance of the technical dimension of CI. Similarly, as trust erodes in public institutions, and polarization and apathy deepens, the social dimension of CI becomes essential. **These two dimensions are interlinked**: societies with greater levels of trust in institutions will incite citizens to contribute their knowledge for public good. Similarly, a public process that can synthesize a range of citizen voices will tend to broaden awareness and knowledge about these policies. If the contributions of everyday citizens are integrated into policy, this can deepen the trust (or repair the mistrust) between citizens and government, yielding a virtuous circle of civic participation in which citizen expectations and government capacity rise together.[17] The converse is also true: a CI process that fails to include certain populations, or generates only weak interest from the public, may produce lower-quality policy outcomes, which in turn diminish trust in institutions and interest in public life. A well-designed collective intelligence process, therefore, is one that achieves impact along both technical and social dimensions, generating good solutions to a complex problem while deepening social trust.

In recent years, collective intelligence methods have proven their effectiveness across the four phases of a policy-making cycle: **(1) agenda-setting, (2) policy creation, (3) implementation, and (4) evaluation/learning**.

These include methods that bring citizens into dialogue with government actors, but so too do they include ways to pool the knowledge within government that is often trapped in silos. New technologies, from crowdsourcing apps to prediction markets, have propelled many of these initiatives, but so too have low-tech methods like generative dialogue and door-to-door community surveys.

Collective intelligence : 4 phases of the policy cycle

1. Agenda setting	2. Policy creation	3. Implementation	4. Evaluation/learning
-Gathering data	-Generating ideas	-Peer-to-peer education	-Evaluation and feedback
-Identifying needs	-Filtering proposals	-Mutual aid	-Capturing best practices
-Raising new issues	-Making predictions	-Skills-matching	-‘Collective wisdom’
-Exploring root causes	-Deliberation	-Monitoring and oversight	
-Tracking a crisis	-Decision		

15 An illustrative comment from a member of the Irish Constitutional Convention: “Finbarr O’Brien, a 64-year-old postman in rural Cork, initially declined the invitation to join. ‘I had no interest in politics,’ he says. But after his eldest son encouraged him to take part, he became one of the more enthusiastic members of the group. ‘It is one of the best things I’ve done in my life. It opened my eyes to a lot of things.’” The Economist, “Personal and political: the liberalisation of Ireland,” December 18, 2019.

16 See Spada 2019. The positive impacts of participatory processes on participants and society at large are explored further in the Annex.

17 See Alsina and Marti, 2018.

1. Agenda setting

First, CI methods can **gather the raw data necessary to define a public problem**. Women in Egypt have used the Ushahidi crowdmapping platform to report incidents of sexual harassment, revealing for policymakers and the public the extent of the problem and identify hotspots.[18] Since 2012, citizens of Bangalore, India, have reported broken streetlights, water shortages and sanitation problems through the "I Change My City" app, which reports an over 92% resolution rate for citizen complaints. With hundreds of thousands of active users, the platform helped mobilize community health volunteers to manage the covid-19 crisis in 2020.[19] Citizen crowdsourcing can prove critical in tracking a fast-moving problem, for example through the short mobile-phone surveys used by the World Bank in Liberia and Sierra Leone in 2014, which gave a "just-in-time" picture of social and economic impacts of the Ebola crisis.[20]

CI methods can also empower citizens to **bring new issues to the table**. The vTaiwan community -- a partnership between Taiwan's Digital Ministry, parliament, and civic technologists -- hosts a mini-hackathon each Wednesday where citizens raise concerns on emerging issues. The community gathers wider input on these initial proposals through "rolling questionnaires" and online forums, then connects the refined proposal to the competent public agency. Since launching in 2015, more than 200,000 citizens have participated in vTaiwan deliberations, resulting in 26 pieces of legislation adopted by parliament.[21] In Finland, the Ministry of Justice invites proposals from the general public through its Citizens' Initiative platform, with the parliament committing to consider any initiative receiving at least 50,000 signatures. Since its launch in 2012, roughly one in three Finns of voting age have signed at least one proposal, with 37 reaching the 50,000-signature threshold to date. Similar online petitioning systems have been launched in recent years in the United Kingdom, Germany, and the US.[22]

Collective intelligence can also be used to **explore the root causes** of public problems, as in York, England, where local residents received training to engage more than 1,000 of their neighbors to identify triggers of loneliness.[23] From observation to agenda-setting and "sense-making", citizens can give critical inputs in these "upstream" phases of the policy cycle.

2. Policy creation (development, deliberation, decision)

Once a public problem is identified, CI methods can be used to reframe options, generate proposals, and deliberate or decide on the best path forward. One commonly used method to develop policy ideas is the **open innovation contest**, in which ideas from the public are invited to meet a given challenge. This can be in the form of an open call for proposals to a clearly scoped problem, as in the Challenge.gov platform used by more than 100 federal agencies in the U.S. since 2010.[24] These contests can also take the form of facilitated workshops or "civic hackathons," where ideas from citizens are developed on broader themes with help from facilitators and domain experts. In the city of San Pedro Garza Garcia, Mexico, for example, the #DesafiosSP open innovation challenge was launched in 2016

18 Ryan et al. 2020, 13, 64.
19 "Janaagraha lauds the launch of booth level COVID management by BBMP; calls for volunteers", August 14, 2020.
20 Ryan et al. 2020, 13.
21 Ryan et al. 2020, 66. The vTaiwan community has also been mobilized for the covid-19 response. Through open data, citizens are able to report the number of masks being purchased, a prompt for the government to ramp up production of masks based on need. See Casayuran 2020.
22 Le Blanc 2020.
23 Ryan et al. 2020, 13.
24 Noveck 2015, 9, 24.

to improve mobility in the city. An expert panel evaluated 125 citizen proposals and ten promising ideas were incubated in a 10-week program delivered by the NYU GovLab; after proposals for a carpooling initiative were implemented, the percentage of children driven to school individually fell from 85% to 5%.[25] Open innovation contests can therefore source high-quality ideas and build citizen capacity to help implement them.

CI methods can also be used to **predict the impact of policy proposals** or the likelihood that an event will occur. When uncertainty is high or relevant data is dispersed or lacking, prediction markets consolidate the informed guesses of many into collective forecasts. These forecasts often outperform individual experts and statistical models. For example, in 2019 and 2020 the Johns Hopkins Center for Health Security partnered with the Hypermind prediction market to forecast infectious disease outbreaks in Africa and around the world. The online platform aggregated more than thousand predictions of hundreds of world-wide public-health professionals and trained Hypermind forecasters on the evolution of infectious diseases outbreaks such as Ebola, Dengue, Influenza and covid-19. According to congressional testimony from project lead Dr. Kirk Sell, on most occasions the "crowd" provided accurate forecasts about three weeks ahead of time; in particular, it gave early and accurate forecasts of the rapid and explosive spread of covid-19. A related method, the prize-backed prediction contest, has shown that participants are given additional incentives to apply their best thinking, the sum of predictions is often astonishingly accurate.[26]

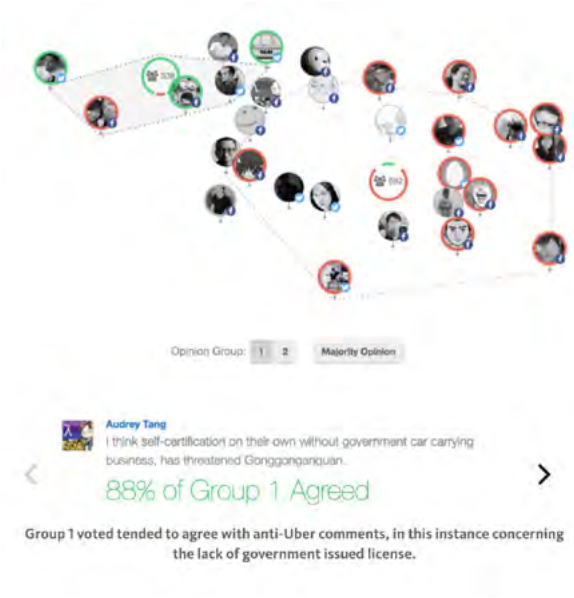
CI methods can be used to **evaluate policy proposals** by relevance or feasibility. One way to do this is through citizens' panels that employ the principles of random selection (sortition) and deliberation. For example, in the Oregon Citizens' Initiative Review, 20 randomly selected citizens study a ballot question (e.g. on changing corporate taxes), with access to issue experts, and prepare a guide for voters summarizing the best arguments for and against the proposal.[27] So too can this be done through multi-stakeholder consultation. For the "Our Common Purpose" initiative of the American Academy of Arts and Sciences, a team of scholars led by Harvard professor Danielle Allen consulted a diverse group of issue experts and communities on reforms to improve the health of American democracy.[28]

CI methods can be used to **deliberate** over options, weigh trade-offs, and break through political stalemates. The last decade has seen a proliferation of deliberative processes based on a representative group of citizens chosen by sortition. These assemblies are given time and resources to study a broad and diverse range of information, deliberate with the help of skilled facilitators, and collectively develop proposals for policymakers, often validated by a public referendum. The output is an informed set of recommendations developed collectively, rather than an aggregation of individual preferences. These processes are sometimes referred to as "mini-publics", since the act of random sampling is designed to produce within a smaller group of citizens the range of views held within society at large.[29] The "deliberative wave"[30] of recent years has shown the power of using collective intelligence to address public problems of the highest importance. A chief example is Iceland's crowdsourced proposal for a new constitution following the financial crisis of 2008-09, the product of a multi-phase approach including representative sampling of citizens and open online contributions.[31] The Republic of Ireland used a Constitutional Convention (combining randomly selected citizens and politicians) and a Citizen's Assembly (citizens only) to address issues that had deadlocked the parliament, leading to national referenda on

25 Ryan et al. 2020, 18-25.
26 Tetlock and Gardner 2015; Servan-Schreiber 2018.
27 OECD 2020, 55-57; see also https://healthydemocracy.org/cir/.
28 American Academy of Arts and Sciences 2020.
29 See Fishkin 2018.
30 OECD 2020.
31 For this process, a "National Forum" of 950 randomly selected Icelandic citizens set principles in place for a new constitution. A 25-person drafting committee, also selected from a representative pool of 522 citizens, then prepared articles, integrating 3,600 online comments. Though two-thirds of Iceland's voters validated the new constitution in 2012, it has been held up by the parliament. See Landemore 2015.

marriage equality and reproductive rights, and new government action against climate change.[32]

In the case of Ireland and Iceland, the proposals were developed by a group of less than one hundred citizens working together over several months, with all members of the public invited to observe and give comments online. Deliberation can be facilitated at a large scale with the help of digital tools, as in the "opinion mapping" tool used by vTaiwan.[33] Many operate entirely in person, as with the "deliberative poll" format used in Tanzania to create a national dialogue on the use of revenues from natural gas.[34] And in France, prompted by the *gilets jaunes* ("yellow vest") protests of 2018, President Emmanuel Macron proposed in 2019 a *Grand débat national* ("Great national debate") combining a range of participatory and deliberative methods, centering on four main themes.[35] Upon completion of the *Grand débat*, President Macron created a *Convention citoyenne pour le climat* ("Citizen's convention for the climate") of 150 randomly selected French citizens, who worked over nine months to develop proposals to reduce carbon emissions 40% by 2030 in comparison to 1990 levels "in a spirit of social justice." Of the 149 proposals submitted by the convention in July 2020, President Macron has committed to submit 146 to a vote either by the parliament or by public referendum.[36] In the face of political and social divisions, he has insisted, "collective intelligence should triumph."[37]



Mapping citizen opinions in a debate on the vTaiwan platform, 2017

32 Also created in the wake of the financial crisis, the Irish Constitutional Convention brought 66 randomly selected citizens together with 33 politicians to recommend reforms to the nation's constitution, leading to a public referendum that legalized marriage equality in 2015. In 2017, a Citizen's Assembly of 99 citizens recommended ending restrictions on reproductive rights and taking new actions against climate change. The former proposal was ratified by a national vote in 2018, and the latter prompted a new government action plan for climate. See Farrell and Suiter 2019.

33 The vTaiwan process combines a discussion platform ("Discourse") in which relevant public authorities are tagged and an opinion-mapping tool ("Pol.is"), culminating in an in-person facilitated consultation and referral to government agency or parliament. See Ryan et al. 2020, 66-70.

34 Sandefur et al. 2020. The deliberative poll is a method developed by Prof. James Fishkin and practiced in 29 countries to date. See https://cdd.stanford.edu/what-is-deliberative-polling/.

35 The four themes of the *grand débat national* were ecology, the national budget, "democracy and citizenship," and "the organization of the state and public services". Channels of citizen participation included the possibility to organize local deliberations with a standardized kit provided by the government; six assemblies based on random sampling; an online platform accepting individual proposals and comments;, and televised town halls with President Macron taking questions from local elected officials, often for several hours in a row. See https://granddebat.fr/.

36 Macron's commitment for a public referendum was renewed in a face-to-face meeting with the 150 citizens in December 2020, and a draft law "inspired by" the convention's recommendations was presented to the Council of Ministers in 2021. As of the writing of this report, a fierce debate continues to unfold as to the "adjustments" proposed by the Macron government to the citizens' proposals. See O. Faye, "Emmanuel Macron et Barbara Pompili, un attelage politique à l'épreuve de la loi 'convention climat'", Le Monde, 9 February 2021.

37 "Emmanuel Macron aux grévistes: il est bon de savoir faire trêve," La Voix du Nord, 22 December 2019.

Though highly specific to the circumstances and political culture of each country, these deliberative exercises often share four elements. One is the use of **census data** to create a representative sample of public voices, using at least age and gender as indicators.[38] A second is the presence of **trained facilitators** to help the group deliberate with balance, coherence, and efficiency.[39] A third is the time and ability for citizens to **draw upon outside expertise**, including those with relevant technical or legal knowledge.[40] A fourth is a balance of **transparency to the public** to build awareness and support -- including live-streamed sessions and online forums -- as well as "closed-door" deliberation to favor frankness and compromise.

Finally, CI methods can be made to **allocate resources directly**, notably through participatory budgeting (PB). Pioneered in the city of Porto Alegre, Brazil in 1989, and now used in 7,000 cities and regions worldwide, a participatory budget process allocates a specific amount of funds (typically for new capital expenses) and allows residents to create and vote on proposals to improve local infrastructure or services.[41] In recent years the cities of New York and Paris have allocated $39 million and 100 million euros per year respectively to their residents, including those -- like 16- and 17-year-olds, as well as non-citizen residents -- who belong to the community but cannot vote in elections.[42] Such processes have allowed communities, including those less represented by electoral politics, to target public resources where they can do the most good. Impact studies have shown that Brazilian cities that held PB processes for over eight years showed a 20% reduction in infant mortality;[43] and that New Yorkers have taken advantage of PB to put greater emphasis on schools and mobility.[44]

3. Policy Implementation

Irrespective of how a policy is created, governments have discovered that implementing it is far easier when the population is informed and mobilized. One method is **an open call for community-led projects** to implement a national policy. Launched in 2013, synAthina is a collaborative platform used by the municipal government of Athens and over 400 community groups. One of the platform's initiatives, "Curing the Limbo," offers city funding and staff support for community activities designed to aid the resettlement and integration of 300 refugees and migrants. The "top-down" government policy of refugee resettlement is thus implemented through "bottom-up" ideas generated by the community, including redesigned public spaces and new cultural activities.[45]

Collective intelligence can be especially useful when a policy requires **the adoption of new**

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38 Other sampling criteria may include geography, profession, education level or income; see Carson and Martin, 1999. As an example, see the sampling process used in 2019 to select the 150 members of the French *Convention citoyenne pour le climat*: https://www.conventioncitoyennepourleclimat.fr/comment-sont-ils-selectionnes/.

39 These facilitators often practice techniques of "generative dialogue" that differ from typical partisan debate. By encouraging participants to suspend judgment and build on others' ideas, these methods aim to produce new insights, bridge existing divides and create a new basis for public action. See Isaacs 1999; Lasley 2010; Gerwin 2018.

40 In the 289 cases reviewed in OECD 2020, participants deliberated on average for a total of four days spread out over five weeks.

41 Gret and Sintomer 2002. See also https://www.participatorybudgeting.org/what-is-pb/.

42 New York's PB process has been put on hold due to the city budget crisis following the covid-19 pandemic. City officials have pledged to bring the process back as soon as financially feasible; see "NYC participatory budgeting group calls on council to revive the initiative," Queens Daily Eagle, 26 October 2020, available at https://queenseagle.com/all/group-guiding-nycs-participatory-budgeting-process-calls-on-city-to-revive-the-initiative.

43 Touchton and Wampler 2020. For a more critical appraisal see Spada 2009.

44 Hagelskamp et al. 2020. The Public Agenda study found that districts with PB were more likely to increase spending in public education, street and traffic improvements, and spend relatively less on parks and housing preservation. There are also examples of "deliberative" budgeting, like the Melbourne People's Panel, where the task was to set the priorities for the city's 10-year, $5 billion plan; see OECD 2020.

45 See https://www.uia-initiative.eu/en/uia-cities/athens.

behaviors. Hashtag campaigns can draw on the collective intelligence of a population by blending promoted messages from public sources with contests that drive peer-to-peer content creation and sharing. During the covid-19 crisis, the #StaySafeAfrica campaign used networks of partners in media, sports, and fashion to spread health messages from the World Health Organization, including celebrity-driven social media challenges to #ShowOffYourMask.[46] The openness of hashtag campaigns creates risks and rewards: while they can be used frivolously or diverted to thwart their original purpose,[47] so too can they draw on local creativity to make a national message more convincing to a local community or target population.[48] Lower-tech techniques to inform and mobilize the public include "deep canvassing", where trained canvassers use a non-judgmental exchange of personal narratives to open a new perspective on a policy issue.[49]

Beyond diffusing information and encouraging positive behavior, the covid-19 pandemic has also shown the power of **direct peer-to-peer support** to achieve a common goal. This can be by harnessing the expertise of networks of professionals; for example, the Human Diagnosis Project (HumanDx) enables medical professionals in 80 countries to invite independent analysis of a clinical case uploaded to a common server; a study of 1572 cases showed that when multiple independent diagnoses were combined, they achieved an accuracy rate of 85.6% compared to 62.5% for individual physicians.[50] Peer-to-peer support can come in the form of knowledge sharing and skills-matching, as with the Mobadarat.ma platform,[51] which connected citizens of diverse skill sets to share knowledge and mobilize around specific challenges in the fight against covid-19 in Morocco. Similarly, open platforms such as Nextstrain allowed scientific researchers to quickly learn and benefit from new pathogen genome data from laboratories anywhere in the world -- an application of CI at a global scale.[52]

CI platforms can also coordinate collective action in the face of a public crisis, helping those in need to access information, find assistance, or raise funds. In New York City, **community "mutual aid" initiatives** included delivering medicine and groceries, offering child and pet care for frontline workers, and organizing relief funds for restaurant and movie theatre employees.[53] Invisible Hands, a volunteer delivery service for the elderly and immunocompromised, was started by three friends in the Morningside Heights neighborhood of Manhattan and grew in three months to include 10,000 volunteers in multiple states.[54] This kind of "grassroots" collective intelligence, though not under the direct supervision of government actors, can be a powerful force to mobilize a population around public needs. Some community initiatives, like British-based MutualAidUK, prize their independence from public actors, who may be legally bound to serve some populations and not others.[55] Others, like vTaiwan and synAthina, begin as networks of community activists and build collaborations over time with government counterparts, ultimately receiving official recognition and funding support. Such collaborations can succeed where government partners recognize citizen creativity and integrate it into legal and budgetary processes while leaving sufficient room for independent ideas, even challenging ones.

Finally, collective intelligence methods can improve policy by including citizens in **oversight**

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46 A joint initiative by the African Union and WHO, "Speak Up Africa" is a "policy and advocacy action-tank" working in partnership civil society groups such as the Confederation for African Football. Their health initiatives included the #ShowOffYourMask social media challenge, in partnership with Senegalese designer Sarah Diouf. See https://www.speakupafrica.org/program/stay-safe-africa/.

47 In one case, the hashtag of an extremist right-wing group was reappropriated by advocates for LGBT rights. See "The #ProudBoys Twitter hashtag has been taken over by gay men," CNN, 4 October 2020.

48 See Saxton et al. 2015; George et al. 2018.

49 Broockman and Kalla 2016; Kalla and Broockman 2020. Rather than seeking to induce a change of opinion through logical argument alone, the method relies upon greater perspective-taking and self-persuasion.

50 Barnett et al. 2019; see https://www.humandx.org/context/background#how_are_clinical_case_contributions_used_to_build_the_project.

51 See http://mobadarat.ma/.

52 See https://nextstrain.org/.

53 J. Tolentino, "What Mutual Aid Can Do During a Pandemic," New Yorker, 11 May 2020.

54 See https://invisiblehandsdeliver.org/our-story.

55 See https://covidmutualaid.org/faq/.

and accountability. Open-information portals can help citizens monitor government action. The Climate Watch website, launched by the city of Helsinki, Finland, lays out 147 indicators and concrete commitments for the city to become carbon-neutral by 2035.[56] The action plan, a product of consultations with civil society and academic researchers, was designed to favor mutual accountability: citizens should be able to track the progress of each goal and propose measures to improve city performance where needed. After creating this tracking system and opening new datasets, the city is developing space on the Climate Watch platform to receive citizen feedback and facilitate discussions.[57] Alternatively, where public data is lacking, citizen-led initiatives can gather data to monitor a situation and use ground-level observations to fill in gaps and encourage further government action. Following the Fukushima nuclear disaster in Japan, which caused 19,000 deaths and displaced 160,000 people from their homes in 2011, the government's data on radiation levels was too geographically broad for a citizen to know whether a certain neighborhood was safe. Former director of the MIT Media Lab Joi Ito and entrepreneur Sean Bonner organized a project to help any individual in an affected area take Geiger-counter measurements and upload their data to a common platform. To date, the Safecast network has taken 150 million measurements from over 100 countries, making it one of the largest distributed data projects in the world.[58]

4. Evaluation and Learning

Finally, the evaluation and learning process can be improved by a diversity of voices and insights. The World Bank's biweekly surveys of public health workers in Sierra Leone, mentioned above, were a means to quickly identify gaps in service delivery and the **personal impacts of policy** on health workers; data from frontline workers was compared with feedback on service quality given directly by citizens.[59] Tools for peer-to-peer annotation of public budgets have been piloted in South Korea; using a web-based interface, citizens following budget discussions online could use the "Factful" interface to gain additional context and evaluate whether budgets were being wisely spent.[60] This evaluation process can be decentralized still further. The Alliance for a Green Revolution in Africa (AGRA) initiative from 2012 to 2016 brought together government and philanthropic actors to support farmer organizations (FOs) in Ghana, Kenya, and Ethiopia. Experts in the Constituent Voice method of impact evaluation trained FOs to **develop new indicators** of organizational strength, empowering beneficiaries of agricultural policies to build their own analytical capacity.[61] Similarly, community-based monitoring in Uganda has provided information on the performance of local health care providers, leading to significant improvements in accessibility and health outcomes for children.[62] Over half of OECD countries now legally require engagement with stakeholders in policy evaluations.[63]

CI methods can also help **pool knowledge within government agencies**, breaking down information silos or preserving knowledge that can be lost when a key figure retires. In the years following 9/11, US intelligence operatives learned that their inability or unwillingness to share information had allowed critical warnings about the attack to go unheeded. Piloted in 2005, the "Intellipedia" platform allows over 250,000 users from now all 16 US intelligence agencies to create and edit over 100,000

56 See https://ilmastovahti.hel.fi/ (Finnish only).
57 Ryan et al. 2020, 26-31.
58 Ryan et al. 2020, 49-53; see https://safecast.org/.
59 Kastelic et al. 2015; see also Bonbright et al. 2015.
60 Kim et al. 2015.
61 This method adapts the Net Promoter Score (NPS), a survey technique developed in the corporate context, to citizen engagement and human development; see Ndiame 2015, Bonbright et al. 2015.
62 Nyqvist et al. 2015.
63 OECD 2020b, 123.

entries on current and emerging security threats, with more than 290 million page views overall.[64] In the sphere of domestic policy, the UK's What Works Network, nine independent research centers, act as "knowledge brokers" to policymakers, collating existing evidence on the effectiveness of programmes and practices, and conducting system-wide reviews in areas where they do not currently exist. The What Works Network covers policy areas which account for more than £250 billion of public spending.[65] Taking an even longer view, UNESCO has dedicated its multimedia archives to **preserving the collective wisdom** of cultures across the globe. Arguing that oral and intangible cultural heritage can play a crucial role in national and international development, UNESCO has added hundreds of entries from the World Heritage List into its searchable database, representing the CI of generations past and present.[66]

How governments succeed or fail in using CI

Collective intelligence doesn't just happen. For governments to benefit from the knowledge of their citizens, engagement processes need to be properly organized and resourced. In this section we examine the most important enabling factors that drive the success or failure of a collective intelligence process.

In a successful CI process...	In an unsuccessful CI process...
Political will is strong, with a clear commitment on impact. Process is carefully designed with stakeholders. Process is sufficiently resourced, including high-quality tools, dedicated staff, and communications budget. A plan is in place to create and sustain capacity within government and among key stakeholders. Feedback loops are effectively in place so stakeholders know exactly how and why insights are implemented into policymaking	Politicians say the right things but fail to follow through on their commitments. Key elements of the process are improvised or ad hoc. Insufficient funds are available to create, staff or publicize engagement channels. Processes are "one-offs", tied to a certain party or political figure, and never institutionalized. Feedback loops are missing, and stakeholders are left with little insights into how CI is integrated into policymaking.

Successful processes tend to have several traits in common. First among these is **political will**. Critical to the success of the national citizen's assemblies in Ireland and France was the fact that they were launched with cross-party support (in the case of Ireland) and an explicit commitment from the head of state to accept citizen proposals "with no filters" (in the case of President Macron). The citizen's assembly in Ostbelgien was also implemented with broad cross-part support.[67] Extensive media

64 P. Szoldra, "America's spies have their own version of Wikipedia — here's what it looks like," Business Insider, 23 September 2016.
65 See https://www.gov.uk/guidance/what-works-network.
66 See http://www.unesco.org/archives/multimedia/subject/13/Intangible+heritage; http://www.unesco.org/archives/multimedia/subject/14/Digital+Archiving+Project.
67 Ryan et al. 2020, 74-80.

coverage of these processes has helped build public awareness and incentivized politicians to maintain their support.[68] Even so, in the Irish and French cases, political resistance has prevented some or most proposals from moving forward as hoped by their creators.[69] Iceland's crowdsourced constitution was ultimately blocked by the nation's parliament. Political champions at the regional or city level can help CI processes to flourish, as in the case of Paris mayor Anne Hidalgo, who has built a range of channels for citizen engagement, including the world's largest participatory budget.[70] Without cross-party support, even the most innovative CI initiatives can disappear. A change in government in Madrid led to the discontinuation of the Consul project at the local level, though this open-source platform had been created with the support of city government and adopted by 135 institutions in 35 countries.[71]

Political commitment is more than about putting the right words into a press release; it is proven, rather, by investing **sufficient resources** to create a high-quality citizen engagement process. For the largest and most time-intensive processes, these may be significant. President Emmanuel Macron's government dedicated a budget of €12 million to organize the *Grand débat national* and €5 million for the *Convention citoyenne pour le climat*, and created project teams with backgrounds in collective intelligence design to manage their operations.[72] Conversely, despite strong support from individual council members in New York City, budget cuts for central staff has put the city's PB process on hiatus. A third factor is for the process to be **well-designed in advance**, so that each channel or phase of engagement is linked to clear inputs and outputs. The vTaiwan community, influenced strongly by agile methods for software development, rigorously test and evaluate their processes, stringing together different tools and facilitation techniques to meet each policy need. In Iceland, on the other hand, scholar Hélène Landemore noted that certain key elements of the constitution's drafting process -- notably, the way in which public comments were integrated into small-group deliberations -- were improvised rather than planned, leading to confusion.[73]

Which methods are the most appropriate for producing crowd wisdom? According to the best scientific evidence, four factors may be crucial:

(1) Scale. How many people are we seeking to participate?

- 100 citizens, 5,000, 2 million…
- Which communications channels will be used to solicit participation

(2) Diversity/representativity. Which types of people are we seeking to involve?

- Diversity of gender, region, language, cognitive abilities…
- Individual participants vs. organizations/groups

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68 See, e.g., A. Garric, "Convention citoyenne pour le climat : le rôle des experts dans la formation de l'opinion," Le Monde, 19 June 2020; A. Garric, "'Fiers' du travail accompli, les citoyens de la convention pour le climat adoptent leur rapport final", Le Monde, 21 June 2020; A. Garric, "'Intelligence collective', 'manque d'audace'… Réactions mitigées aux propositions de la convention citoyenne pour le climat," Le Monde, 22 June 2020.

69 See N. O'Leary, "The Myth of the Citizens' Assembly," Politico, 18 June 2019; A. Garric, "Avant la fin de la convention citoyenne pour le climat, de l'énervement, des accusations et des déceptions," Le Monde, 5 December 2020.

70 See https://www.paris.fr/participation-citoyenne. The Paris mayor's office has faced criticisms as to its voting rules and incomplete execution of selected projects; the process was relaunched in early 2021 with significant reforms. Accepting criticism and integrating feedback are important elements of the city's strategy to make these initiatives sustainable. See D. Cosnard, "La Mairie de Paris réforme en profondeur son budget participatif," Le Monde, 28 January 2021.

71 See https://consulproject.org/en/.

72 Agence France-Presse, "Le grand débat a coûté 12 millions d'euros, annonce Sébastien Lecornu," 4 April 2019.

73 See Landemore 2020.

(3) Engagement quality. In what form will they participate?

- Time invested by each participant: minutes, hours, months…
- Level of interaction among participants : aggregative (low or zero) or deliberative (medium or high)
- Real-time or asynchronous participation
- Facilitation methods (online and in-person)
- Framing of questions (open-ended, multiple choice…)
- How much context or information provided to participants
- Voting and prioritization methods
- Use and accessibility of digital tools (proprietary or open-source)

(4) Impact. What impact will their participation have?

- Impacts on public policy (advisory or binding)
- Impacts of that policy on communities
- Impact of the process on participants (empathy, critical thinking, awareness of public affairs…)
- Impact of the process on institutional capacity

There is **no single "right answer"** to these questions. A citizen science initiative may function better on an aggregative model, relying on participants who never meet but share independent observations; a citizen's assembly, on the other hand, relies upon high-quality interaction over a period of days or weeks. For some processes, it may be important to give specific legal context or policy information in advance; for others, it may be better to take a "blue sky" approach and invite disruptive ideas. Furthermore, the optimal answer to these questions may not be the maximal one. For example, allowing many citizens to make a quick contribution may be more beneficial than a smaller group investing a full day of their time, or vice versa. Practical constraints will also come into play: scaling up an in-person deliberative exercise may entail greater costs (e.g. room rentals, facilitators, and time) than scaling up an agenda-setting exercise on social media. They are also interdependent: a greater scale of participation may reinforce political impact; conversely, where political actors make no commitments in advance, the low likelihood of impact may dampen participation. In sum, considerations of scale, diversity, and engagement quality will vary according to the issue and phase of the policy cycle. The annex to this note provides an overview of recent empirical studies that may help in weighing each of these factors.

By far the biggest risk in planning a collective intelligence process for government is a lack of sustainability. The novelty of a new engagement initiative may attract temporary political support and media buzz, but co-creating policy with citizens requires **new capacities within government**. In Belgium, new citizens' assemblies are being institutionalized at the level of the Brussels regional Parliament (1.2 million inhabitants) and in the Ostbelgien region (77,000 inhabitants), engaging a network of researchers and civil society actors to train and support government teams.[74] Adapting to local civic cultures is critically important -- what a citizen is willing to share in Taiwan may be very different than in Belgium, and vice versa. Learning platforms such as those of the NYU GovLab and Apolitical.co allow researchers and civil servants to share best practices, case studies, and develop new competencies

74 Ryan et al. 2020, 74-80. Belgium's federal Strategy Unit has a team dedicated to building up in-house expertise and resources for all levels of government, enabling even small communes to carry out an effective random selection process. Their facilitators will be available to advise on deliberative processes, but they are also developing in-house open-source online platforms for participation and natural language processing.

through online conferences and MOOCs.[75] Some governments have even created special entities that upskill public actors in innovative methods of citizen engagement; these include the UK's Behavioral Insights Unit (known as the "Nudge Unit"),[76] and France's Direction interministérielle de la transformation publique (DITP).[77] The GovLab / NESTA report cited widely in this note contains a wealth of learnings and best practices for institutionalizing collective intelligence processes within government.

The most important enabler of collective intelligence, finally, may be a **change of mindset** within government. For generations, the idea of political legitimacy has been linked to the two poles of elected representatives and professional civil servants. Even in nations where these two categories still command wide public trust -- a small and shrinking list -- problems are growing too complex not to draw on wider circles of expertise, especially when these are distributed across large and diverse populations. Where the idea of "citizen expertise" continues to confuse or threaten those in government, an increasing list of positive examples is showing this idea to be not only feasible but indispensable. And against arguments that only elected officials or civil servants can legitimately represent the public interest, theorists like Hélène Landemore propose coherent frameworks for "open democracy" where deliberative mini-publics and elected assemblies complement one another.[78]

Changing the mindset of government actors, and expanding the horizon of the politically possible, may benefit from **linking multiple CI processes together.** An open innovation contest like #DesafiosSP or a community platform like synAthina may pose a lesser challenge to existing power structures; such "lower-intensity" citizen engagement can help build the trust and political will for "higher-intensity" ones like a deliberative assembly or participatory budget. Advocates of collective intelligence may include those seeking deep changes in political institutions, but so too can they be faithful stewards seeking to stabilize them. An exportable "model" of democracy, if such ever existed, may have only suited an age of romantic ideologies and territorial-based state power. In this century of online platforms, new policy actors, and border-defying crises, it may only be fitting that governance will increasingly resemble an adaptive ecosystem rather than a law inscribed on parchment with pen and ink.

[BOX : Three categories of national consultations considered by the CSMD]

i. Multi-stakeholder models

- Focus: maximize political impact through coalitions;
- Theory of change: to win public support for reform, need key organizations within society as endorsers and allies; diverse local information and specialized knowledge will drive quality of outcome;
- Strength: maybe quality of interaction, maybe diversity;
- Weakness: probably representativity; dominance of "usual suspects", lack of innovation;
- Best policy phase: co-creation (feasibility), implementation (mobilization).

75 See https://covidcourse.thegovlab.org/; https://apolitical.co/home. OECD 2020 recommends establishing offices for citizen participation and deliberation, staffed with knowledgeable process designers, facilitators, and evaluators, as well as a body of best practices from past processes.
76 See https://www.bi.team/.
77 See https://www.modernisation.gouv.fr/qui-sommes-nous.
78 See Landemore 2020.

ii. Participatory models (open and self-selected)

- Focus: maximize scale of contributions, especially from least-favored groups;
- Theory of change: to win public support for reform, need as many members of public participating and "co-owning" the process; more participation creates more momentum for change;
- Strength: scale;
- Weakness: maybe representativity (b/c of self-selection), maybe quality of interaction (aggregative approach, 'show of hands,' is less likely to produce innovation);
- Best policy phase: agenda-setting (watching out for sample bias), idea generation, policy choice (legitimacy).

iii. Deliberative models (sortition-based)

- Focus: maximize representativity through random sampling ('mini-publics');
- Theory of change: to win public support for reform, policy should be built on a base of representative voices from all parts of society;
- Strength: quality of interaction leads to more innovative solutions (technical); deliberation eases polarization, and 'mini-public' of everyday people insulated from interest groups can be perceived as more legitimate (social);
- Weakness: small scale (though this can be mitigated, e.g. Ireland); existing stakeholders may block;
- Best policy phase: sense-making; proposal generation; filtering/deliberation.

B. CSMD: A MODEL OF DEVELOPMENT BASED ON COLLECTIVE INTELLIGENCE

1. Mission and context

On 16 December 2019, the Honorable Chakib Benmoussa, Morocco's former Interior Minister and current Ambassador to France, gathered 35 colleagues of the newly named *Commission spéciale sur le modèle de développement* (CSMD), at the Royal Academy in the leafy outskirts of Rabat. As the Commission's president, Benmoussa announced a two-fold mission to be completed by June 2020: create an "objective and precise" diagnostic of the nation's economic, political, and social development, and propose the contours of a new model "with human development at the center." This new model was not to be in the form of a judicial decree or economic simulations. Rather, the CSMD would be responsible for conceiving a "shared vision" of the nation's development for the coming 15 years, with recommendations for new policies and reforms to diversify the "sources and beneficiaries of national wealth" across "all territories and social categories."[79] Benmoussa entreatied his colleagues to be "frank, neutral, without taboos, excluding no subject."[80] Furthermore, achieving their great objective, the inclusion of all Moroccan citizens in the nation's development, would require working methods embodying those same values. The directive given the Commission by King Mohammed VI was to call upon "the full range of national talents, the committed actors and vital forces of the nation."[81]

The men and women present that afternoon, whether they knew it or not, embodied the cognitive diversity that studies suggest is essential for collective intelligence.[82] The 35 commissioners included a professor of medicine and founder of an AIDS non-profit; a young expert in crowdfunding and organizer of "civic hackathons"; a well-known political scientist and playwright; a former prime minister; the young founder of a management consulting firm; a post-doctoral researcher in renewable energy; a successful international banker; and a documentary filmmaker, among others. In a country whose high political offices are typically filled by older men, ten of the 35 were women and nine were under the age of 45. What this highly diverse group shared was a record of leadership in their fields and a patriotic commitment of an unknown but probably monumental amount of time, energy, and intellectual effort in the months to come.

Why did Morocco need a new model of development? By some measures, the nation had made significant strides: its average GDP growth of 4.4% from 2000 to 2017 placed Morocco's economy among the most dynamic in Africa, and the percentage of its population in severe poverty had declined from 15.3% in 2001 to 4.8% in 2014.[83] By other measures, however, the nation was lagging: in the UNDP's ranking of human development, Morocco stood at 121 out of 189 nations measured; its Gini coefficient, the international measure of economic inequality, had remained unchanged since the 1980s; and only 21% of the estimated 13.4 million Moroccan women of working age participated in the workforce.[84] Though its working-age population grew by 270,000 people annually between 2012 and 2016, just 26,400 net new jobs were created on average per year. Only 17% of the working age population had formal employment, and less than 10% a formal private-sector job.[85] These demographic pressures

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79 "Début des travaux de la Commission spéciale sur le modèle de développement," Medias24, 16 December 2019.
80 ("franc, objectif, sans tabous, n'excluant aucun sujet").
81 ("à ce que soient associés l'ensemble des compétences nationales, des acteurs sérieux et des forces vives de la nation").
82 See Hong and Page 2004; Page 2017.
83 From 2010 to 2019 Morocco's GDP growth averaged 3.5%, and only 2.8% in 2018-19; see M. Panara, "Le Maroc scrute son modèle de développement économique," Le Point, 18 December 2019.
84 Official figures of Morocco's Haut-Commissariat au Plan, 2019: https://www.hcp.ma/Note-d-information-du-Haut-Commissariat-au-Plan-a-l-occasion-de-la-journee-internationale-de-la-femme-du-8-mars-2020_a2466.html.
85 World Bank, "Morocco Country Private Sector Diagnostic 2019," available at http://documents1.worldbank.org/curat-

were compounded by ecological ones. Thanks to historic investments in renewable energy, Morocco in 2019 was one of only two countries to meet Paris Accord targets.[86] Nevertheless, stress on the nation's water supply had driven its reservoirs to only 37% of capacity, with some in the south falling below 5%, and agricultural production -- a sector employing 40% of Moroccan workers -- threatened by droughts of increasing severity.[87]

In the eyes of many Moroccans, these challenges required an entirely new approach from government. Peaceful protests in the spring of 2011 had led to the proposal of a new constitution by King Mohammed VI, putting more political power in the hands of an elected parliament, allowing the free competition of political parties, and decentralizing a range of functions to regions and localities. In the context of national consultations initiated by the King, thousands of Moroccan citizens had participated via an online platform organized by civil society actors, Réforme.ma, to propose and debate ideas for the nation's constitution.[88] Subsequent analysis showed that nearly 40% of these proposals voted by the citizens on this platform were reflected in the new constitution. Nevertheless, while public approval of Morocco's head of state had remained steady in the following years, participation in elections was uneven and dissatisfaction with the political class deepened.[89] While Morocco joined the Open Government Partnership in 2018,[90] successful examples of citizen engagement in policy were lacking. Greater transparency had not yet led to greater participation. Aspirations for a more inclusive civic culture, so evident in the spring of 2011, had been largely unmet.

In an address to the nation in July 2017, the King declared that Morocco's current model of development was no longer working. He declared that he had "identified the difficulties that prevent the evolution of our development model, and noted the dysfunctions that plague all levels of the Administration and at the level of elected councils and local authorities."[91] In a speech to representatives of the nation in October 2017, he elaborated his analysis: "While Morocco has made clear, globally recognized progress, the national development model, however, is now proving unable to meet the pressing demands and growing needs of citizens, reduce categorical disparities and territorial gaps and achieve social justice." He concluded this address by inviting "the government, the parliament and the various institutions or bodies concerned, each in its own area of competence, to reconsider our development model to bring it into line with the developments that the country is undergoing."[92]

The CSMD was created to make sense of these contributions. In an address of August 2019, the King announced that this Commission of 35 members would be charged with making recommendations as to the new direction of the country. Creating this new social contract with the Moroccan people would require, in his words, "an inclusive, participatory approach when addressing the major issues of the nation to make sure all key stakeholders are actively involved."[93]

How would this new Commission consult the "national talents" and "vital forces" of the country? Though new spaces for public dialogue and consultation had been opened since 2011, relatively

ed/en/228331567687617816/pdf/Creating-Markets-in-Morocco-a-Second-Generation-of-Reforms-Boosting-Private-Sector-Growth-Job-Creation-and-Skills-Upgrading.pdf.

86 See https://climateactiontracker.org/countries/morocco/2019-09-19/.

87 See https://www.initiativesfleuves.org/actualites/maroc-penurie-deau-sintensifie/.

88 The Réforme.ma site saw over 130,000 unique visitors in three months; see https://www.rfi.fr/fr/afrique/20110421-maroc-site-internet-participer-reforme-constitution.

89 See https://www.maroc.ma/fr/actualites/elections-legislatives-2016; https://telquel.ma/2016/10/10/abstention-bipolarisation-makhzen-les-elections-legislatives-vues-letranger_1518436.

90 See https://www.opengovpartnership.org/members/morocco/.

91 Full speech available at http://www.pncl.gov.ma/fr/Discours/TTDiscours/Ann%C3%A9e2017/Pages/Discours-trone-.aspx.

92 Full speech text available at http://www.pncl.gov.ma/fr/Discours/TTDiscours/Ann%C3%A9e2017/Pages/Discours-%C3%A0-l%E2%80%99ouverture-de-la-premi%C3%A8re-session-de-la-2-%C3%A8me-ann%C3%A9e-l%C3%A9gislative-de-la-10-%C3%A8me-l%C3%A9gislature.aspx.

93 Full speech text available at https://www.moroccoworldnews.com/2019/08/280746/king-mohammed-vi-revolution-of-the-king-and-the-people/.

few Moroccans had made use of them, and a culture of free expression remained nascent at best. Trust needed to be built, and new methods tried. The CSMD's challenge was not only to propose a model of development centered upon the citizen -- a difficult enough task -- but choose methods that embodied these values, leading by example. But how best to start a conversation with 36 million people?

2. CSMD: designing collective intelligence

In defining its methodology, the CSMD drew upon several guiding commitments. One was to study the full breadth of public concerns. "National development" could touch upon topics as diverse as rural infrastructure, monetary policy, gender and cultural identity, public corruption and inefficient bureaucracy. Equally important were its commitments of frankness and of inclusion: within the bounds of the constitution, any criticism would be heard and any Moroccan citizen who wished to participate would have an opportunity. Finally, the Commission was charged with presenting actionable recommendations, not merely criticisms; and while it was free to take inspiration from international examples, the new model of development would be, in the King's words, *maroco-marocain*.

Fulfilling these commitments would require keeping sight of certain constraints. While enjoying a strong remit from the head of state, the CSMD was a *commission consultative*; legally speaking its powers were advisory only, and its recommendations would not be self-enacting. Further, this was not to be a "blue-sky" exercise, but a continuation of a national dialogue that the King had inaugurated two years before. A 500-page document, representing two years of inputs from public and private organizations, was handed to the CSMD in December 2019 at the start of its work. And while the public mandate given by Morocco's king created a reasonable expectation of political impact, the Commission could make no promises: its proposals would need the head of state's consent and the follow-through of government actors to take effect.

These constitutional constraints were joined by pragmatic ones, the first of which was limited time. The CSMD's final report was expected by the end of June, though this was extended to December in the face of a second, unanticipated constraint: the arrival of covid-19 in Morocco in March 2020. While a decisive early response initially spared the Kingdom from the level of casualties suffered in Europe, impacts on the nation's economy were severe and the majority of the Commission's in-person events for the remainder of 2020 would be cancelled or moved online. A new model of development would clearly also need to account for this crisis. The pandemic had drawn further attention to the weaknesses of the public health system and social safety net, and new learnings were likely to arise from this unprecedented moment. Finally, the resources available for citizen engagement were concentrated on getting the 35 members into the field, and would look quite different to the French *Grand débat national* or the Irish Citizens' Assembly. In its choice of methods the Commission would need to be both experimental and prudent, both creative and careful not to reach beyond its grasp. And it needed to move fast.

At its first retreat in December 2019 on the UM6P campus in Ben Guérir, the CSMD's president issued a challenge to his fellow commissioners: collective intelligence would guide all aspects of their work. But what would this mean in practice? First, the Commission would need to develop **internal ways of working** that drew on the full talents and ideas of its 35 members. This was a group of high achievers and strong personalities, each with robust ideas on the nation's needs. How would they organize their work such that one set of voices did not dominate the others? While this was hardly an easy task, their **external methods of collective intelligence** would be trickier still. Members of the CSMD all agreed that some kind of national consultation was expected, but to what degree should Morocco's new development model be created by the Moroccan people as well as for them? On this nuanced question of legitimacy, opinions differed. Some commissioners pointed out that they had been personally

named by the head of state and given the responsibility of proposing a new model of development; ultimately, it was their judgment alone that should frame the final report. Others rejoined that if their recommendations were to reflect the full range of "national talents" and "vital forces" of the country, they would need to make room for ideas from citizens, even when these diverged from their own.

In the weeks that followed the December retreat, the 35 commissioners, working in subcommittees and supported by CSMD staff, conceived their plans of action. The UM6P School of Collective Intelligence was asked to support the development of methods adapted to the Moroccan context and reflecting international best practices. As the CSMD decided upon its consultation methodology, commissioners and staff were encouraged to reflect upon how best to meet the four collective intelligence indicators described above: scale, cognitive diversity, engagement quality, and sustainable impact.

By the end of January 2020, the principal design choices had been made. The consultations would unfold in three phases:

I. An **agenda-setting phase** to diagnose the strengths and weaknesses of Morocco's current model of development and identify the main preoccupations of the public for the new model;

II. A **co-construction phase** to identify levers for change and invite concrete proposals from citizens and organizations; and

III. A **"refinement" phase**, in which CSMD members would synthesize inputs from the public, deliberate, and draft their final report.

With regard to their collective intelligence methodology, three design choices would prove particularly consequential:

(a) **A hybrid multi-stakeholder/participatory approach, completed by internal deliberation.** The CSMD decided to strike a balance between engaging directly with different sources of expertise, receiving input from citizens and organizations, and generating their own ideas for Morocco's new model. In addition to honoring their commitments as commissioners, this approach had the benefit of allowing both the "internal" and "external" work of the Commission to begin at once. The usual policymaking sequence (agenda-setting, proposals, deliberation and decision) was adapted into a more fluid process by which inputs from the public would continuously inform the Commission's internal deliberations.[94] This posture -- welcoming input from organizations and the general public, but reserving the roles of deliberation and decision -- also required expectations to be carefully managed in each of the CSMD's interactions with the public. Their message would be that all contributions would be carefully reviewed, and a synthesis of contributions included in the report, but commissioners would exercise final judgment in their recommendations.

(b) **Multiple channels to maximize diversity and scale**. The CSMD decided to pursue the goals of broad participation and cognitive diversity by opening eight channels of contribution:

(1) Stakeholder hearings (***auditions institutionnelles***[95]) with political parties, unions, professional associations, NGOs, and national and regional government actors, later complemented by regional hearings (***rencontres regionales***) held online with political representatives, business leaders, and university presidents from each of Morocco's 12 regions;

(2) Working sessions (***ateliers de travail***) with national and international domain experts;

94 As we will see, though formally divided into three phases -- diagnostic, co-construction, and "refinement" (post-covid) -- in practice the first two phases worked in parallel, with proposals of different lengths accepted from the start of the process.
95 Since the English equivalents of these names are somewhat inexact, in what follows I will mostly refer to these channels by their French names.

(3) Citizen meetings (***rencontres citoyennes***) planned for each of Morocco's 12 regions; 30-60 participants chosen via an open call online, with filters to ensure approximate parity by age, gender, and urban/rural residents;

(4) Listening sessions (***séances d'écoutes citoyennes***) with a similar format to the *rencontres citoyennes*, but organized with local associations who selected participants, often from their membership or client base; associations could also create affiliated events (***conférences labellisées***), with at least one CSMD member participating;

(5) An online platform, **CSMD.ma**, featuring a citizen questionnaire on issue priorities, a space for open contributions, and information on CSMD in-person and virtual events;

(6) Field visits (***visites de terrain***) in all 12 regions of the country, targeting populations less likely to contribute online, and featuring a mix of formats including guided tours, roundtables, and workshops;

(7) Calls to contribute (***appels à contribution***) in writing from populations less likely to do so proactively, organized in concert institutional partners;

(8) Free contributions (***contributions libres***) in writing from any citizen or organization, accepted by mail to the CSMD offices and through a dedicated email address.

Each of these channels would be adjusted in light of the covid-19 pandemic, as discussed below.

(c) **Iterative learning and refinement**. The limited time available for the Commission's work obliged their "internal" and "external" collective intelligence to operate in tandem. Internal work was structured around a plenary session each Monday and a monthly weekend-long retreat, each time in a different city (including field visits as well as internal work). In between, four CSMD working groups[96] would commence the deliberation and drafting process. Members heard directly from citizens through the in-person hearings, field visits, and *rencontres citoyennes*, among other activities. For contributions received by mail and online, the *Pôle écoute et contributions* (citizen engagement team) would also make periodic reports in CSMD plenary sessions on contributions received online and in person. These regular "touch points" were envisioned both to inform the substance of the Commission's work and to refine its methods; inputs from the public could refocus a subcommittee on a particular issue, and so too could they inform which populations to engage in subsequent outreach, and further questions to pose. The iterative approach was also to prove particularly important as the covid-19 crisis began in March 2020.

What reasoning lay behind these choices? A mix of political, scientific, and pragmatic considerations were in view.

First, an important element of the CSMD's theory of change was that for its work to succeed, certain **key stakeholders** of Moroccan society -- business and civil society actors, as well as political ones -- would need to be engaged early in the process. Such a sign of respect was important both for their substantive inputs and also that these dialogues would raise the likelihood of their collaboration (or at least their non-obstruction) in implementing the new development model. As a result, hearings with these stakeholders began in January, and written submissions were received throughout the year. It is worth noting that while a multi-stakeholder perspective naturally favors those who already enjoy access to the political process, the CSMD sought to engage less-favored populations through their 30 field visits, as described below.

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96 The CSMD's four thematic subcommittees were dedicated to "Human Capital" ("Groupe capital humain"), "Social Capital" ("Groupe capital social"), "Economy and wealth creation" ("Groupe économie et création de richesses"), and "Territories and sustainability" ("Groupe territoires et durabilité"). A final working group, "Groupe vision et conduite de changement," focused on transversal questions.

Second, while CSMD members expressed strong interest in the "mini-public" approach, they decided to prioritize **open calls for participation** in the agenda-setting and co-construction phases. The CSMD closely studied the examples from Iceland, France, and Ireland and recognized the unique potential of citizens' assemblies to ensure representation of voices less often heard in Moroccan politics. Their decision to prioritize a participatory/multi-stakeholder approach rested on three main factors. First, unlike nations like France and Ireland where random selection is a well-established feature of the judicial system, sortition has no reference point in modern Moroccan institutions. In fact, the opposite was true: a perception that the CSMD could choose which citizens to consult would play into negative stereotypes of government manipulation and control.[97] A sortition-based approach was also at odds with early political expectations that all stakeholders and the general public would have direct access to the CSMD and contribute their ideas.[98] Significant public resistance would be likely, a serious investment would be required to educate the public to earn their trust in these methods, and both time and funds were limited. Conversely, broadcasting a call for participation to the general public could serve the objectives both of agenda-setting and of gaining visibility with the public in the early phase of its work. Moreover, the CSMD aspired to harness the value of **mini-publics** -- the ability to generate new ideas from the convergence of multiple perspectives -- in its own deliberations. Some members argued that the diversity present among these 35 colleagues -- age, gender, professional background, regional and international knowledge -- made the CSMD a mini-public of sorts, though selected on the basis of outstanding talent rather than representativity of the population as a whole.[99] Nevertheless, given the strong interest of CSMD members in mini-publics as an emerging international best practice, it was agreed to pilot a sortition-based deliberative exercise in the final phase of consultations.

Third, the decisions to prioritize stakeholder outreach and open participation channels helped determine how the CSMD would achieve cognitive diversity in its pool of contributors. With an intended scale of at least several thousand contributors, a detailed survey of cognitive skills was unfeasible. Rather, two indicators of diversity were made paramount: **diversity of local information and of specialized knowledge**. To maximize the diversity of local information, the CSMD would concentrate on ensuring full coverage of Morocco's 12 regions. In addition to *visites terrain* in conjunction with monthly full-Commission retreats, the CSMD chose to broaden its geographic range by augmenting the total number of *visites* and reducing the number of Commission members taking part in each.[100] On the online platform, a regional rubric was created to gather detailed feedback from each territory. For the *rencontres citoyennes*, an open call and registration form were posted on the CSMD.ma platform and Facebook page, with the message that given space constraints, the CSMD would randomly select attendees from the pool of RSVPs to create a balance by age, gender, and urban/rural residence.[101] While approximate, these proxy indicators of cognitive diversity were decided to be the most feasible given time constraints and the sensitivity of the public to any "filters" created for participation in these events. Regarding the diversity of knowledge bases, the four CSMD subcommittees prepared their *auditions* and *ateliers de travail* by conducting mapping exercises to identify the different types of domain knowledge relevant to the issue area, seeking wherever possible to go beyond the "usual suspects" in its list of invitees.

A final important choice was the decision **to use an iterative planning process** based on the

97 In a section entitled "Representations", the CSMD report identifies a challenge that many Moroccans have a mental representation of "systemic control as the mode of administration and decision" ("du contrôle systémique comme mode d'administration et de décision") in their country. See CSMD report, page ##.

98 These expectations were reflected in press coverage of November and December 2019. See, e.g., https://maroc-diplomatique.net/chakib-benmoussa-la-methode-et-son-esprit/; https://telquel.ma/2019/12/12/liberte-de-culte-egalite-dans-lheritage-transformation-de-leconomie-ce-que-propose-le-mouvement-damir_1658207; https://www.medias24.com/commission-sur-le-nouveau-modele-de-developpement-voici-ce-que-l-on-sait-6080.html.

99 Another criterion in which CSMD members were likely not representative of the general public was their current socio-economic status, though specific data was unavailable on this point.

100 Detailed reports of each field visit were prepared by CSMD staff so that members not attending a given visit could receive a full briefing subsequently.

101 This sampling was conducted based on public data from the Haut-Commissariat au Plan for the appropriate region.

feedback received in the early stages of the consultations. In practice, this meant setting aside time in advance to evaluate preliminary outcomes and see which populations had been under-represented thus far. The hypothesis of CSMD members and staff was that some geographic and demographic categories would be less likely to participate proactively in the agenda-setting and co-construction phases, but it was difficult to predict in advance where these gaps would be. As such, a stock-taking session was planned for early April to weigh the results of the agenda-setting phase, and the partial results of the co-construction phase, before deciding whether new consultation methods would be tried. (With the onset of the pandemic and the extension of the CSMD's mandate to the end of the year, this stock-taking session was moved to mid-June.) Two methods to fill in participation gaps would be the organization of new in-person workshops and calls for written submissions, each in partnership with institutional or civil-society actors with special access to certain target populations.

3. How did the CSMD's methods work in practice?

Timing. Though the consultations were formally divided into three phases -- agenda-setting, co-construction, and refinement -- in practice the first two phases operated simultaneously. This was driven by two pragmatic concerns: (1) time pressure to begin consulting key stakeholders right away (especially the nation's principal political and economic actors), and (2) the decision to let each citizen contribute in the form and manner of their choice. In practice, the design of consultation activities and the online platform solicited "lighter" agenda-setting feedback (in the form "here are the issues that matter to me" as well as "heavier" proposals (in the form "here's what should be done") within the same channel. The onus was put on CSMD staff, rather, to analyze the data in such a manner that high-priority issues, and propositions on those issues, were synthesized and restituted to Commissioners.[102]

***Rencontres citoyennes* and *séances d'écoutes*.** The "citizen encounters" and "listening sessions" were designed primarily as an aggregative channel, gathering themes and proposals from the widest possible range of participants. Though certain deliberative elements were attempted within the format of these events, the majority of contributions took the form of individuals testifying to their own experiences and ideas. The pilot *séance d'écoute* was held on the UM6P campus in Ben Guerir in late December 2019, with a format of small-group guided storytelling (3-4 young people and 2-3 CSMD members in each group), followed by full-group restitution of the young people's stories by the CSMD members, then open reflections from all participants.

Séance d'écoute with UM6P students, December 2019

102 This review, analysis, and restitution required an enormous investment of time from CSMD staff. The four-step process is described below.

This first *séance d'écoute* was widely considered a success, with rich personal stories and highly emotional moments, frustration and sharp criticisms as well as expressions of gratitude, patriotism, and affection. A factor in creating an environment of psychological safety may have been that almost all of the participants were from the UM6P community, and many knew one another prior to the *rencontre*. Alternatively, the following 5 *rencontres*, whose participants responded to an open call and thus were less likely to know one another, were structured as "town halls" of 35-60 people: after words of welcome, individual participants were given the floor one at a time, with CSMD members (generally 3 or 4) offering a synthesis of comments at the end.[103]

Naima, a resident of Meknes, shares concerns about public safety during a *rencontre citoyenne* in her city

While efforts were made to place individual contributions in dialogue with one another -- including a graphic artist to visualize the collective testimony in real time -- this "turn-taking" led to a more formal atmosphere than the small-group guided storytelling. A cultural factor in these "town halls" may have been the perception that the CSMD, as *mandataires de Sa Majesté*, were representatives of the state whose presence required this formality. To their credit, the CSMD members made special efforts to create a peer dynamic with their fellow citizens; they spoke only briefly at the beginning, sat on the same level in the room,[104] and left the majority of time for citizen testimonials with almost no time limits for each. Sessions closed with a synthesis by CSMD members of what they had learned from the session, and members always stayed afterwards for selfies and one-on-one chats.

Conférences labellisées. In the interest of enlarging the space for contributions, the CSMD announced in February the possibility for associations to create their own affiliated events. To receive the official CSMD "label" (i.e. the use of the CSMD name and logo in the event invitation), organizers committed to choose a specific theme for discussion, to respect the CSMD code of ethical conduct, and produce a 1-2 page report summarizing key outcomes of the event. At least one CSMD member was in attendance at each *conférence* to represent the Commission and hear directly from participants. The pandemic forced the organization of these events online; 25 in total were conducted.

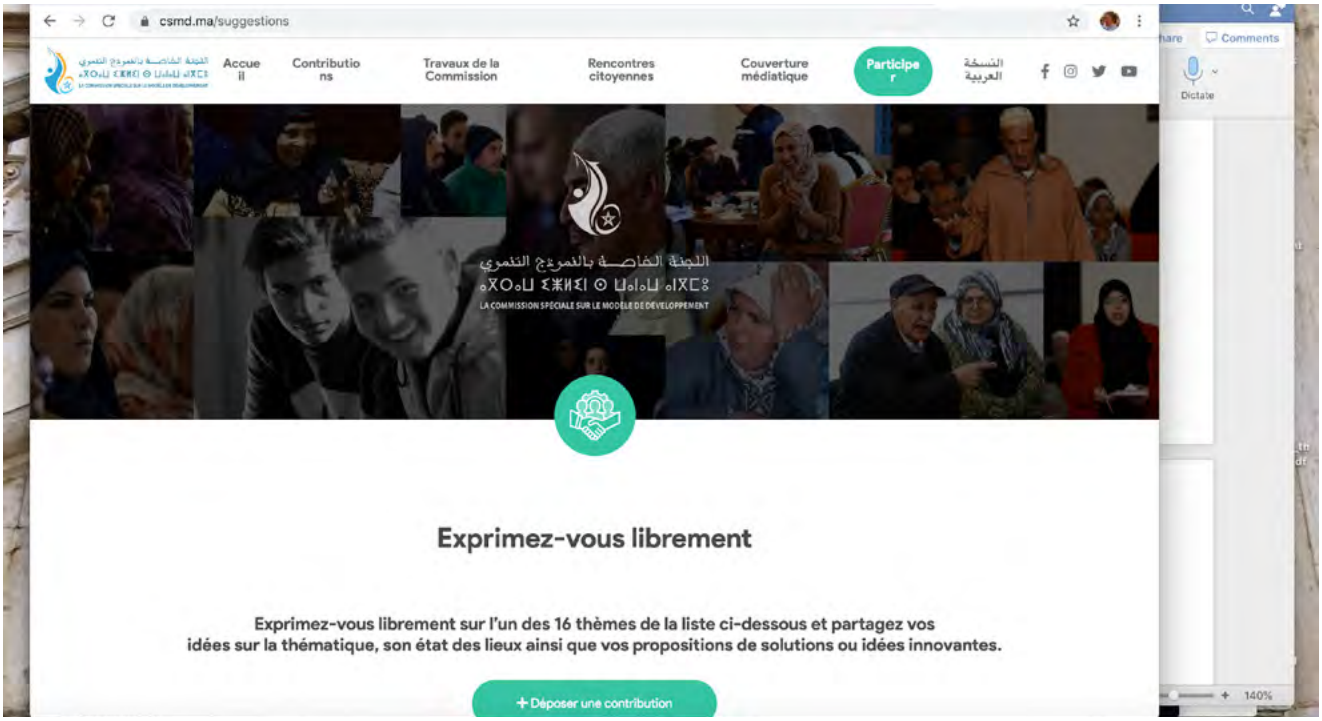
103 This was the format adopted by the *rencontres citoyennes* held at Larache, Fes, Meknes, Taounate, and Khenifra in February and March 2020.

104 Where possible, all chairs were configured in a circle to break down any perceived difference of status between CSMD members and session participants.

Field visits. Aware that geographic disparities were a subject of major national concern, and sensitive that its activities not be confined to principal cities, the CSMD organized 30 visits to Morocco's regional centers, towns, and villages. These visits included many places, such as villages in the High Atlas or Rif mountains, characterized by their disconnection or marginalization in Moroccan economic or public life. Local associations played a critical role in organizing visits to community centers and to learn from local health, education, and cultural projects. These visits were designed to serve multiple purposes: first, to hear directly from local service providers, entrepreneurs, and activists about their activities and needs; to see the programs on site and learn from their staffs; and to exchange with larger groups of local residents through *séances d'écoute* (listening sessions) organized by the local partner. These listening sessions often took the form of a full-group welcome followed by small-group discussions with 2-3 CSMD members and 10-20 residents per group, then a restitution and synthesis of key learnings by commissioners to the full group -- followed always by extensive selfies and informal chats. Several CSMD members would later report that these small-group discussions and informal exchanges ended up producing the most eye-opening insights of the year.

Séance d'écoute at the Centre d'Azrou pour le Développement Communautaire in Azrou, February 2020

Online platform and social media channels. Launched in early April 2020, the CSMD.ma platform functioned primarily as an educational and agenda-setting channel, though also providing the possibility of more detailed submissions from citizens. The contribution section of the platform featured three questions designed to elicit quick responses from a large number of visitors: "In one word, what is your Morocco?"; "What is one thing you want to change in Morocco?"; "What is one thing you want never to change in Morocco?" This short questionnaire was complemented by two rubrics: a "thematic" page, where site visitors were prompted to give feedback on any of 16 themes (e.g. education, health, public governance); and a "regional" page for citizens to give feedback on areas of special concern where they live.

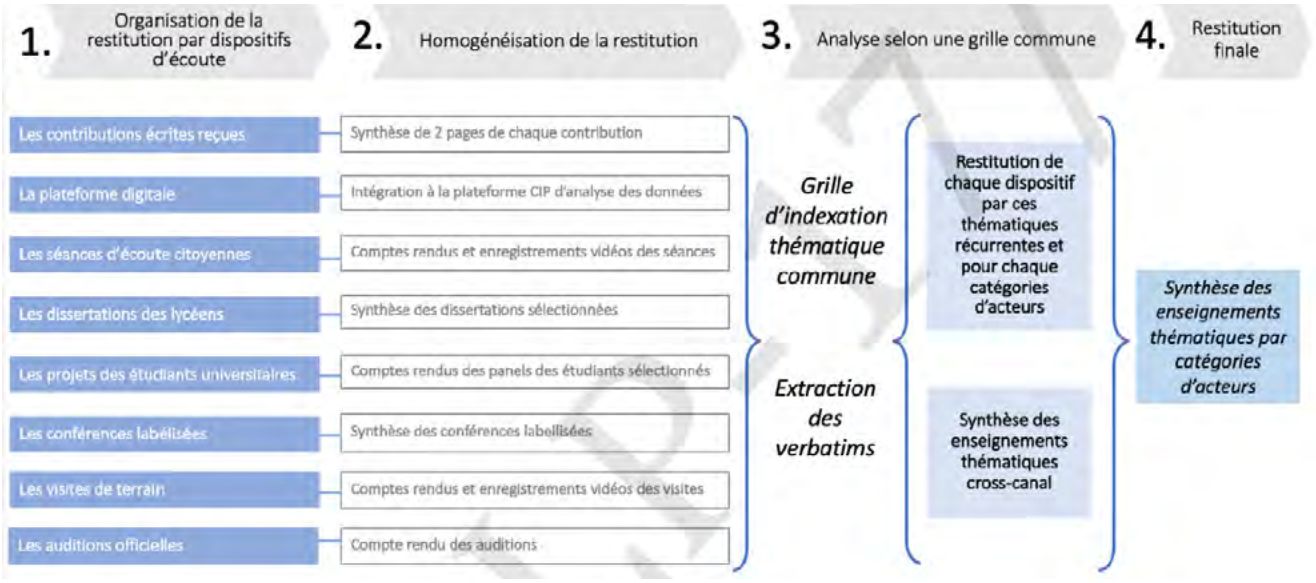


The CSMD.ma platform solicited contributions on 16 themes related to Morocco's development

Given that widely used platforms such as Facebook, Twitter, and Youtube are not always known for substantive, fair-minded exchanges of views (to put it mildly), opening CSMD accounts on these platforms was a calculated risk. "For us, communication on social media couldn't be a one-way street," notes one CSMD staff member. "It was how we could prove our transparency -- 'see, you can comment, you can see everything live, you won't be blocked.'" In the spring and summer of 2020, many *auditions* and *ateliers experts* were live-streamed on Facebook and subsequently posted on YouTube. For the live events, comments were monitored and CSMD members could respond to comments in real time. "We certainly had some critical voices," notes the staff member. "Comments like, 'When will the results come?', 'Why is this event in French?', 'This is a waste, we already know what's wrong with Morocco'. But frankly, this was healthy and no more than we expected. On the whole, thanks to openness of CSMD members, we found a very nice level of respect, and some very long and interesting comments as well." A subsequent comparative analysis by the Commission of social media comments, included as an appendix to the report, showed that while comments were shorter than those on the CSMD.ma platform, they showed a striking convergence on key issues of concern.

4. How were citizens' contributions analyzed and integrated?

The *Pole écoute et contributions* created a four-step process to convert the data from each consultation channel into a common format and to make this readable to CSMD members. The first step was to create a dataset for each channel -- e.g. written contributions, open-text submissions on the platform, notes and images from the *rencontres citoyennes* -- containing the totality of submissions for that channel. Secondly, each dataset was cleaned in a manner appropriate to the form of the data; for example, each event was given a standard reporting template, and a brief synthesis was prepared for each written contribution.



The open-text data from the CSMD.ma platform was analyzed through two independent Natural Language Processing platforms, one from the International University of Rabat (UIR), the other from Mohammed VI Polytechnic University (UM6P). These platforms applied two complementary techniques. The UIR platform took as an input the framework of 16 priority themes used by the CSMD (including health, education, and gender), and categorized the open-text data according to these themes. The UM6P platform, on the other hand, used a database of themes created organically from past analysis of online media, applied these to the CSMD's open-text contributions, and analyzed the patterns that emerged. Both platforms provided demographic and geographic filtering to identify top areas of concern by region, age, and gender.[105] Further, these platforms used clustering techniques to show positive and negative correlations among different themes -- for example, that a citizen concerned by public corruption was also likely to be concerned about the poor state of infrastructure in their region. "This hybrid method," explained a CSMD staff member, "allowed us to stay within the scope of issues as the members were thinking about them, while staying open to what other concerns may be out there and making sure we took them into account."

105 Insights here would take the form, for example: "Women were more likely than men to cite higher education as their top concern, as well as residents of Marrakech and Tangier-Tetouan regions."

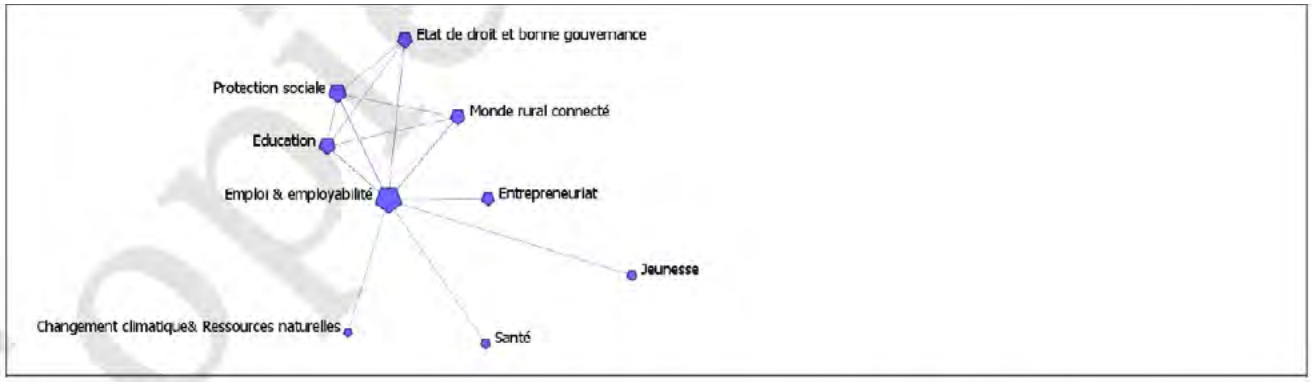


Fig. 4. *Cooccurrence des thématiques associées à l'Emploi dans les écoutes et contributions de la CSMD*, Université internationale de Rabat, septembre 2020.

The third step of data analysis was the indexing of each dataset by theme, and the extraction of *verbatim* (direct quotations) that illustrated tendencies within the principal themes. Finally, to render these outputs readable to the CSMD, a synthesis was prepared of the themes from each channel (including areas of special concern and concrete proposals); a synthesis of each theme as it appeared across the different channels (e.g. ideas on youth job readiness from all sources); and finally, a synthesis of all learnings for each category of contributor.[106] The restitution of these contributions was fluid and continuous: some contributions had been made in the presence of CSMD members at hearings or workshops; reports of field visits were regularly distributed;[107] and the key findings from online channels were presented at plenary sessions in June and November 2020. This quantity and rhythm of incoming information posed a challenge to CSMD members and staff, but so too did it open the possibility to combine information from diverse policy domains and draw insights at a system-wide level.

106 Categories included political parties, professional associations, unions, public institutions, NGOs and residents of rural areas.

107 Not all CSMD members were able to attend each field visit, and these summaries also included background information and additional testimonials that those in attendance may not have heard directly.

C. CSMD: RESULTS AND LEARNINGS

1. What were the main outcomes of the CSMD's work?

In the twelve months of its mandate, the CSMD received over 10,000 written pages of contributions from **6,600 individuals and 165 organizations.** Through organized consultation activities (in-person and virtual), Commission members interacted directly with **9,700 individuals**. These activities included 5 *rencontres citoyennes*, with participants chosen along geographic and demographic representivity;[108] 30 field visits, 20 of which incorporated *séances d'écoutes citoyennes*; 70 *auditions institutionnelles* whose participants included political parties, unions, professional associations, and regional administrative bodies; 113 *ateliers d'expert*, including researchers and domain experts; 25 *conférences labelisées* held online and open to the public; an online platform with 50,000 unique visitors, and a social media campaign reaching an estimated 3.2 million citizens. The breadth, detail, and diversity of contributions were each unprecedented in the modern history of Morocco.

From these contributions, two areas of concern emerged above all. First, citizens expressed frustration with what they perceived as "*la panne de l'ascenseur social*": a sharp **decline in social and economic mobility**, especially for the young and those living far from the principal urban centers. Second, citizens expressed grave **disappointment in the performance of public officials**. Of special concern were the failures of the education system, the insufficiencies of the social safety net, an inefficient bureaucracy, and the continued prevalence of corruption and rent-seeking among those exercising power. Alongside these frustrations, however, citizens presented hundreds of examples of local projects and initiatives (referred to in CSMD parlance as "*émergences*") that had shown promise in reinventing educational models, creating jobs, advancing gender equality, and protecting natural resources under stress. Above all, Moroccan citizens expressed pride in their country, hope in its unrealized potential, and a keen appetite to participate in public life. As one young woman put it, "If citizens are not engaged, if they are not involved in public debates and decisions, all change will be in vain."[109]

The New Model of Development (NMD), delivered to King Mohammed VI in December 2020, proposed five development objectives for the nation, and identified four systemic knots (*noeuds*) to unravel,[110] as well as four strategic axes of transformation, 72 concrete propositions within those axes, and five levers for system-wide change.[111] Development is redefined as "a global and multidimensional process that goes beyond the sole objective of accumulating material wealth," instead becoming "a virtuous cycle of wealth creation and human development that benefits all citizens and that recognizes the need to valorize and preserve our resources for future generations."[112] Such a conception of development requires stable and open political institutions that "give to each individual the means and capacities to affirm themselves, liberate their energies, forge their destiny and choose their path."[113]

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108 See discussion of sampling methodology above. The initial goal, three in-person *rencontres* for each of Morocco's 12 regions, was made impossible due to the covid-19 crisis.

109 ("[S]ans adhésion des citoyens, sans leur implication dans les débats et dans les décisions qui seront prises, tout changement sera vain.") CSMD Report, 10.

110 These include "the absence of global development vision with strategic reference points"; insufficient regulation of the economic sphere; limited capacity of the public sector to create policy and deliver services; an inefficient bureaucracy and judiciary; and limited avenues for citizen participation.

111 These include digital transformation; capacity-building in public administration; diversified public financing; the Moroccan diaspora; and international partnerships.

112 CSMD Report, 26 ("un processus global et multidimensionnel, qui va au-delà du seul objectif d'accumulation des richesses matérielles"; "[une] dynamique vertueuse de création de richesse et de développement humain, qui bénéficie à tous les citoyens et qui tient compte de l'impératif de valoriser et de préserver les ressources pour les générations futures.")

113 Ibid. (""qui offre à chaque individu les moyens et les capacités de s'affirmer, de libérer son énergie, de forger son destin et choisir son chemin").

Achieving this, the CSMD declares, will require transforming a "culture of conformity" within public institutions into a "culture of leadership, initiative and performance." This transformation will require changes in the recruitment and compensation system for public employees; extensive training in new methods of collective intelligence and citizen-centered policy; and a new spirit of openness that encourages initiative, experimentation, and collective learning.

The keyword of the new model is "participation." The experience of the CSMD's consultations showed the power of diverse perspectives in tackling complex problems, as well as the untapped desire of citizens to share ideas, feedback, and specialized knowledge. The CSMD recommends that Morocco's new model of development be centered on human well-being and powered by civic participation, especially at the local level.[114] New channels of participatory democracy are proposed, including participatory budgeting for municipalities, crowdsourced plans for regional and communal development, and new online platforms for feedback on public services.[115] Here two proposals in particular are worthy of note. The first is the "delegation of local public services to affected communities," which would imply direct citizen participation in service delivery as well as policy creation. Such a proposal would present a considerable innovation in Moroccan governance, bringing with it important questions of resources, capacity, and legal considerations on how a delegation of public authority to community groups would work in practice. A second recommendation of interest is the creation of "*espaces de débat socio-théologique*," where social issues such as reproductive rights, child marriage, and the status of women can be discussed openly with the participation of religious figures, researchers, activists, and any citizen affected by these issues.[116]

Developing and scaling these participatory channels, in the CSMD's view, will require **a massive change of mindset within public institutions** and among citizens as well. Government actors must be more entrepreneurial in their approach to policy, inclusive in their methods, and transparent with regard to outcomes. Citizens, too, must seize the opportunity to participate, educate themselves on public issues from reliable sources, offer critiques respectfully, and treat those of different views with empathy and consideration.

2. How did the covid-19 pandemic affect the CSMD's work?

The first cases of the novel coronavirus were diagnosed on Moroccan territory on March 2nd, 2020. As in many countries, impacts of the pandemic reached every corner of Moroccan society, confining millions indoors and impacting or destroying the livelihoods of many.[117] The pandemic thus affected the CSMD's work in a number of ways, both substantive and operational. On the substance of the report, the pandemic **laid bare the insufficiencies of Morocco's social safety net**, emphasizing further the desire for systemic improvements. "We realized that this was a game-changing event," notes one staff member, "and we had to show that we were making covid its own theme and a source of new lessons and ideas." By April, inputs from multiple channels put a sharper focus on rebuilding the safety net, promoting national self-sufficiency to produce essential goods, and a reinforcement of Morocco's

114 This recommendation reflects, rather than departs from, commitments in Morocco's constitution of 2011 to participatory democracy and the rule of law. As such, many recommendations were less about changing the constitution than about more faithfully applying the principles therein.

115 CSMD Report, 45 (PB, local services); 71 (espaces de débat).

116 A recommended adjustment may be to use the term "dialogue", which connotes the non-judgmental exchange of perspectives to find new convergence, instead of "debate", which connotes opposing sides who either win or lose. See Isaacs 1999.

117 See World Bank and Haut-Commissariat au Plan, "Note stratégique: Impact social et économique de la crise covid-19 au Maroc," July 2020, available at https://www.hcp.ma/file/217379/.

public health infrastructure, including better-staffed hospitals and clinics, more manufacturing capacity for medical purposes, and more infrastructure for advanced research.

As for the CSMD's collective intelligence methods, a first response was to cancel all in-person events following the announcement of the national lockdown on 13th March, 2020. Internal plenary sessions and subcommittee meetings of the Commission moved onto Microsoft Teams. As one CSMD staff member remarks, "The pandemic meant that we had to go online ourselves, but also find a way to reach citizens who were the least likely to connect. We had committed publicly to reach all of Morocco, and we needed to be even more creative to keep that commitment." New emphasis was placed on creating social media content and developing the online platform. Additions to the platform included a "rubrique Covid-19" which asked citizens for their ideas and learnings related to the pandemic, and a "rubrique Region" for citizens to share needs and ideas specific to their region. The CSMD also organized 85 new hearings, some for a second exchange with political parties and institutional actors, to gather additional feedback in light of the pandemic, and new calls for participation from high school and university students, described below.

It is difficult to gauge how the pandemic affected the scale and diversity of participants. On the one hand, online participation from some populations may theoretically have benefited, given that some segment of the population was stuck at home with little to do but surf the internet. However, it is likely that both the scale and diversity of participation was reduced overall, given both that the health and economic crisis consumed a great deal of public attention, and that those hardest hit by the virus (such as the economically vulnerable and mothers of school-age children) were least likely to give feedback online. Some of these diversity challenges, especially related to economically vulnerable youth, were addressed by the creation of new consultation activities, described below.

Another disappointing development was that time and resources initially envisioned for the sortition-based deliberative pilot in September and October ultimately fell short, and the exercise did not move forward. The pandemic was not directly to blame; rather, due to the very large volume of written submissions (10,000 pages), the review and synthesis of contributions took up significantly more time and resources than anticipated. Though the mandate of the CSMD was extended to the end of December, by September the volume of submissions was already such that the CSMD's leadership decided to prioritize a full review of submissions already received rather than embark on a new deliberative exercise. While the volume of submissions was in many ways a sign of the Commission's success in creating interest, the resulting inability to pilot a sortition-based exercise was a disappointment.

3. How else did the CSMD incorporate learnings along the way?

Among the most important of the CSMD's design choices was allowing for **periodic self-evaluations** to iterate and adjust its consultation methods. After the completion of the first *rencontres citoyennes* in March and the first wave of online submissions in early April, there were important indications that the subjects of greatest concern were broadly shared across regions and demographic categories. In particular, the low quality of public services (especially higher education), the low capacity of public administration, the decline in economic opportunity outside urban centers, and "*la moralisation de la vie publique*" (against favoritism, rent-seeking and corruption) appeared to enjoy strong consensus. Conversely, with few exceptions, issues that provoked strong differences of opinion -- for example, the language of instruction in schools -- did not tend to be the issues of greatest salience overall. Rather, the "bread and butter" issues of economic opportunity, education, and health were those that came to the fore, with a strong emphasis on geographic inequalities.

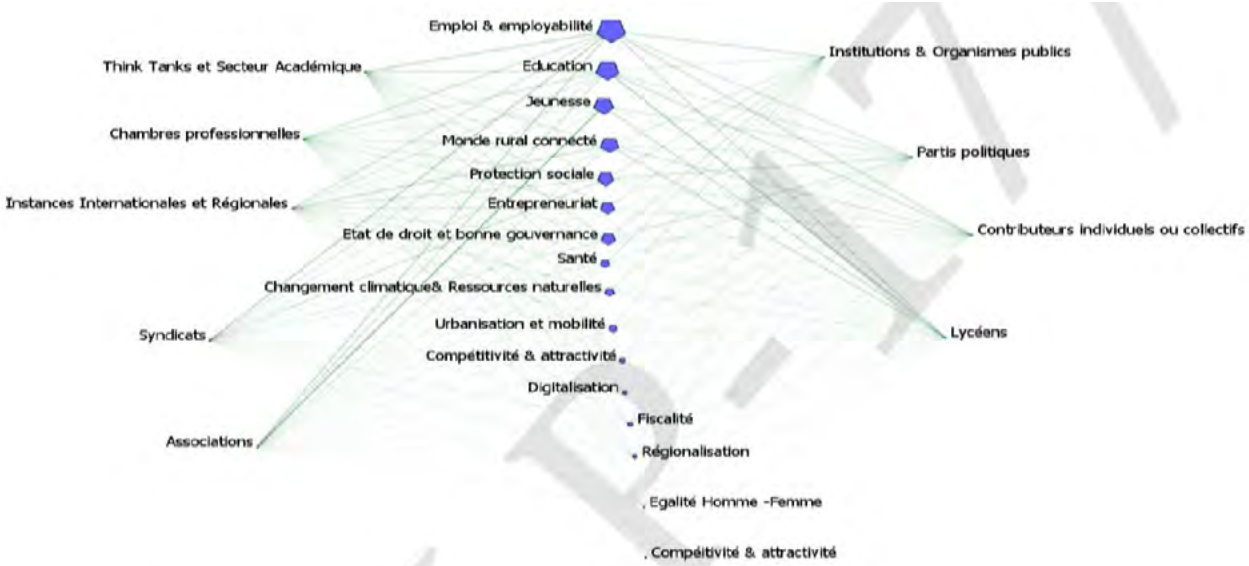

Fig 1. *Thèmes les plus évoquées dans les écoutes et contributions de la CSMD*, Université Internationale de Rabat, octobre 2020

After an internal review of these results in early May, the CSMD made two decisions to refine their methodology. The first decision was to maintain the online-based consultative channels and put **greater attention to identifying *emérgences***, innovative local projects with useful learnings and/or the potential to scale. These were identified and studied through additional *visites terrain*, and interviews with social entrepreneurs, educators, and NGOs, as well as *séances d'écoute* held with the Moroccan diaspora in France and Canada.[118]

The second decision related to the diversity of participants. In 2020, an estimated 40% of Morocco's population was under 25 years old.[119] Though thousands of younger Moroccans had made contributions on the CSMD.ma platform and the Commission's social media channels, these text-based contributions tended to be both less qualitatively rich and much shorter than contributions gained through in-person channels, at which older Moroccans had been more likely to attend. To give fuller expression to the voices of younger Moroccans in the CSMD's report -- including those least likely to access the political debate -- three new calls for participation were created. A first call to high school students, to submit a short dissertation on "Tomorrow's Morocco," generated 3277 submissions, all of which were included in the large data analysis described above. A second call to university students generated 347 submissions.[120]

A review and preselection by regional academies[121] and universities yielded a pool of "outstanding contributions" from 44 high school and 60 university students. Importantly, these contributions were selected not by the perceived quality of their ideas, but rather the level of detail and quality of expression. These standout contributors were invited to participate in six thematic panels, featuring 44 high school students and 60 university students. A third call was created for prison detainees: organized with the General Delegation for Penitentiary Administration, this call generated 225 individual submissions, reviewed manually by CSMD staff.

118 These *séances d'écoute* with members of the diaspora were complemented by a virtual hearing with the *Conseil de la Communauté Marocaine à l'étranger* on 22 May 2020.
119 https://www.cia.gov/the-world-factbook/countries/morocco/#people-and-society.
120 These calls for participation were organized in partnership with the Moroccan Ministry of Education and the Conference of University Presidents.
121 The regional bodies with oversight over Morocco's secondary schools.

Finally, new participatory workshops were organized for young people around the themes of social and economic inclusion, arts and culture, and professional development for youth who found themselves outside the formal system. In each of these workshops, three to five Commission members and 15-20 young people developed their reflections in small groups, using facilitated role-play exercises. A CSMD staff member noted that these workshops were "the only place throughout the consultations where arts and culture emerged as a critical subject, and the connection between cultural self-expression and political self-expression." A major point of emphasis emerging from these sessions, once again, was the need to reduce geographic disparities and increase opportunities for rural youth. As one participant remarked, "public authorities need to stop thinking of young people simply as a 'target group' and begin treating us like public actors with the power to make good proposals that can really influence public decisions."

4. How did the CSMD deliberate?

The 35 members of the Commission made an investment of time that, even in comparison to the time-intensive Irish and French citizen assemblies,[122] was exceptional. Over the 12 months of their work, they met in 61 plenary sessions and 5 weekend-long retreats, for an estimated 430 hours of structured internal work, not counting the considerable hours invested by members to review inputs and prepare their ideas.

Conscious of the deadlines they faced, the members were hard at work on the structure of the report as early as February, taking input "from the field" in continuous fashion as they deliberated in the working groups. As the drafting process began in earnest in June, the wide diversity of their backgrounds -- a primary source of strength for the Commission -- quickly became a challenge as well. As one member describes, "We had 35 opinionated people with deep experience, many published authors and researchers. On almost every issue, there was a strong chance we had at least one bona fide expert in the room. Respecting this expertise required a lot of modesty from the rest of us, an openness to listen and modify our views."

Another member was more pointed: "the difference in levels of mastery of a given topic [among Commission members] could create real dissonance -- not a difference in outlook necessarily, but a real difference of comprehension. After working on some of these issues for 20 years, this created some discomfort for me because we had to stay at a more superficial level in order to find a common denominator." When asked if the smaller working groups served to develop more detailed proposals, the member replied, "Yes, we had more latitude in the working groups to get into the weeds, but frankly I wish this had been reflected more in the finished product." A third member was more upbeat regarding the diversity of the group: "It's normal that on certain subjects, we wouldn't find consensus right away, nor should we. You have people on the left, on the right -- for example, on an immigration question -- and this is totally normal. Here, I think collective intelligence is not about everyone finding common ground, but really airing different points of view. A respectful confrontation of ideas is what makes a healthy democracy."

Some members reported that the intense time pressure placed on producing this major document, the extremely broad scope of the issues, and the fact they were all juggling other jobs and commitments, put them in "rush mode" from an early stage. "I wish we had had more time for more lateral

122 Members of the 2016 Irish Citizens' Assembly committed to attending ten weekend sessions; see https://www.rte.ie/news/2016/0910/815628-citizens-assembly/. Members of the 2019-20 French *Convention citoyenne pour le climat* initially committed to six weekend sessions, then added a seventh; see https://www.conventioncitoyennepourleclimat.fr/#.

thinking, getting further outside the box," noted one member. "If the scope had been on a single issue alone, this would have been much more possible." The CSMD members worked hard to turn the very broad scope of issues from a constraint to an advantage. As deliberations continued into the summer, the weekly restitutions in plenary sessions allowed the group to draw links across domains and give a truly system-wide view of human development in their country. "As we drew all these inputs together, we kept finding points of convergence," observes one member. "For example, in all these different contexts we heard the word 'khogra', meaning 'disregarded' -- we realized that a transversal challenge was citizens needing to feel seen and heard by their government." This system-wide view led to an idea: identify "systemic knots" (*noeuds*) that needed to be unraveled for change to take hold in any one domain, as well as "levers" (*leviers*) to scale up and accelerate positive change. This, in effect, was how the "MD" in CSMD came to be understood by its members: the worth of a development model lies not in precision but in coherence, not in the specificity of policy outputs but the wisdom of its linkages, values, and ambitions.

D. CONCLUSION: A MOROCCAN MODEL OF COLLECTIVE INTELLIGENCE

Did the CSMD's collective intelligence methods work? In the most basic sense, the answer is yes. The Commission oversaw the most sophisticated public consultation in Morocco's history, earned broad participation from a diverse body of citizens, and put their concerns front and center in its final recommendations. A critical element of this success was the coherence of the CSMD's methods with its values; the diligence, transparency and openness of its 35 members exemplify the principles at the heart of Morocco's new model. Though their internal deliberations may have benefited from more time and facilitation, the report they produced is impressively clear, comprehensive, and ambitious.

Were citizen voices numerous and diverse enough? Looking at the volume and breadth of contributions, the results were very significant. The 180 individual sessions (including hearings, workshops, and *rencontres citoyennes*) and contributions, real-time and in writing, of 165 organizations and 9700 individual citizens, generated an enormous pool of information that required the full capacity of the CSMD staff to synthesize, and of Commission members to interpret. In particular, reviewing written submissions seemed to require a far greater investment of staff time than initially anticipated.

Regarding the **diversity of voices**, the CSMD's multi-stakeholder approach may have given undue weight to those who already enjoyed access to the system. On the other hand, participation from political and institutional actors was strong across regions and political affiliations, and creating buy-in from these stakeholders was a critical element in the Commission's theory of change. Nevertheless, the CSMD's in-person outreach -- and especially the field visits and participatory workshops[123] -- successfully created opportunities to hear perspectives less likely to be accounted for in hearings with political parties, policy experts and institutional actors. "For the rest of my life, I'll never forget those field visits," declares one member. "In the High Atlas mountains we visited Taliouine, 'saffron capital of the world'. The people of this village would never have thought to talk to us, but once we were there, they shared their stories, hopes and struggles. What we tried was really exhaustive." From the testimonies both of CSMD members and participating citizens, this in-person outreach created a very rich stream of feedback, constrained in part by the covid-19 pandemic. Methods that used storytelling in small groups were seen as generating the richest insights into the root causes of national problems, adding vivid first-person experiences to the wealth of statistics and reports.

The success of **online channels** was more mitigated. Though the social media campaign reached an estimated 3 million Moroccans, only 2270 citizens ended up contributing their ideas and preferences through CSMD.ma. To put the number in some context, the "National Pact" initiative of Panama, also conducted during the covid-19 pandemic, generated 70,000 proposals from 150,000 individuals in a nation of 3 million.[124] France's *Grand débat national* -- consulting a population a little less than twice as large as Morocco's -- generated 1.9 million online contributions and 27,000 individual letters or emails.[125] Such comparisons may not be apt. A lower rate of online contributions may be explainable by fewer resources available for public communications, differences in political culture (e.g. citizen familiarity with, or trust in, public consultations[126]), differences in the purpose of these initiatives, or a combination of the above. In any event, the CSMD report may not have suffered from the relatively

123 Several of the "expert hearings" also featured representatives of less powerful actors in Morocco's economy, including organizations of artisans, freelancers (*travailleurs independants*), and licensed professionals (*professions liberales*); for these actors, the need to strengthen the social safety net was a prominent theme.
124 See https://www.agora.gob.pa/.
125 According to statistics provided on the French government's official site, https://granddebat.fr/.
126 It should be noted that the Reforme.ma initiative in Morocco generated 40,000 unique online contributions in a 4-month period in 2011.

modest participation online. Given that the main purpose of the online channels were to confirm the issues of greatest concern, and strong convergences appeared across regions and demographic groups, 2270 contributors may have been sufficient to ratify that consensus.

Overall, the CSMD largely achieved its goals of **hearing voices from every region in Morocco**, and its special efforts to hear from less-favored groups bore fruit. The themes of geographic equity, decentralization of public resources, and inclusion of youth and rural areas in development are central to the new model of development. If there were missing voices, notes one member, "it may have been those who 'experience our economy in real time', the workers and small business-people who are less well-represented in civil society groups." Would a deliberative exercise based on truly random sampling have expanded this circle of voices still wider, unmediated by other filters? For Moroccan public actors seeking to implement the new model, sortition-based methods of deliberation could help achieve the fullest possible understanding of these issues.

How high was the **quality of engagement** with each participant? Here the evidence is also quite positive. At every stage -- most visibly in the *rencontres citoyennes*, but also in field visits and hearings -- CSMD members modeled the values of neutral and empathetic listening. Reports from participants in these activities were overwhelmingly positive, with many noting that this was the first time they had felt truly listened to by representatives of the state. "What was so surprising," marveled an elderly attendee of the *rencontre citoyenne* at Taounate, "was that they asked us to tell them everything, anything we wanted -- about corruption, injustice, as well as what we were proud of in our region. The Commission was ready to hear everything."

The CSMD also achieved **a good fit between time invested by participants and the richness of their contributions**: in-person events were structured to maximize citizen speaking time and minimize "protocol speeches", and the questions posed online (e.g. "What is one thing you would like to change about Morocco?") were easy to understand, neutral, and quick to elicit a response. While some moderation was needed on social media channels to weed out trolls, there were no signs that minority views were discouraged or crowded out by other contributors. Indeed, with minor exceptions such as the language of instruction in Moroccan schools, contributions tended to be highly consensual -- even if the agreement was that the state of public services was dire.

The collective intelligence that emerged from these channels was based, in the end, on **the aggregation of many voices of Moroccan society**, followed by deliberation among the 35 Commission members. While deliberative methods were tested in the participatory workshops (in facilitated small groups), the level of interaction among participants in the *rencontres citoyennes* was quite low, despite best efforts by the CSMD team, and the larger-scale deliberative exercise did not take place. The relative success of the small-group format where it was tried -- in the Ben Guérir *rencontre*, the Ifrane field visit and the July/August youth workshops -- hint at an untapped potential of everyday Moroccans to deliberate creatively and constructively on public issues.

As to the success of **deliberations within the Commission**, opinions are interestingly mixed. All members interviewed for this report voiced their gratitude in the opportunity to build close relationships with accomplished, intelligent people outside their professional domains. "Working with these colleagues was like getting a PhD in everything," noted one. Another member reported being disappointed by the dominance of certain voices within the working groups, noting, "We did an excellent job of listening outside, but we could have used our own collective intelligence better at times -- everyone had such strong opinions, it was hard to really combine our ideas." A third member agreed, adding, "I was surprised at the beginning that a lot of us seemed to already have clear objectives in mind. In my case I had a lot of education experience, but I ended up learning a lot from a colleague with a more private-sector perspective -- I didn't agree at first with his ideas, but he often ended up convincing me." Several members emphasized the importance of good facilitation in making small-group deliberation

effective: “we definitely had the right brains, but sometimes with all the different personalities we lost time going around in circles -- having facilitators on hand to guide meetings is a practice I would recommend.”

A special word should be reserved for the most important facilitator of the CSMD’s collective intelligence, Commission President Chakib Benmoussa. Regarding his talents and personal qualities, members were unanimous. “He is a person of exceptional empathy,” said one. “I never saw him once express frustration or impatience -- he could always sense where the consensus lay in the room.” “Chakib was incredible,” affirmed a second member. “He really committed to the idea that the Commission should open its doors to people of every view, even the most critical ones. Even better, he made sure we went on the ground and listened to people who were least likely to come find us.” Empathy, patience, seeking consensus while respecting difference -- from all accounts, these qualities of leadership were on full display by the diplomat entrusted by King Mohammed VI to lead this work.

On the indicators of scale, diversity, and engagement quality, then, **the CSMD largely succeeded in bringing the collective intelligence of their fellow citizens to bear**. For the fourth and final indicator, impact, there are several positive indicators to note. Within a framework of respect for the constitution and the principal institutions of the state, on almost every page of the report the status quo is challenged and ambitious new targets are set; this combination of national pride and impatient criticism seems to reflect faithfully the contributions of Moroccan citizens to the CSMD in all their forms. Indisputably, the voice of everyday citizens is manifest in the new model the CSMD has proposed.

Did this citizen input *change* the minds of any Commission members, or merely reinforce their previously held opinions? Here as well, views differ. One member insisted that the citizens had a major impact: “In our plenary debates we often quoted directly from what we had heard, ‘Don’t you remember what that guy in the village said?’ Those field visits played a major role -- I would go as far as to say that this report wasn’t really written by the 35 of us, technocrats in an office, but with the people in a very deep sense.” A second member echoed this point, adding, “For all the technical challenges of this report, what I really retain from the experience are the times I was touched emotionally, not just intellectually. The young people of our country, their maturity of reasoning and expressing -- during the virtual hearings with high school students, sometimes I had to turn off my camera because of the tears in my eyes.” A third member was more circumspect: “I would say that these encounters reinforced what I already knew about the precarity of my fellow citizens and their feelings of disconnection. What surprised and impressed me was their refusal to bow to these difficulties, their will to challenge ineffective institutions and demand opportunities.”

What role will citizens play in **implementing the new model of development**? One member praised the collective intelligence methods, but argued, “we need these things not because people have all the answers, but because it valorizes their experience and let’s them express themselves. This isn’t enough for structural change, though -- we need political will at the highest level, and a ‘dream team’ of public servants to implement it. Structured and intelligent citizen pressure is very important, but a country can only really transform by its elite.” A second member countered, “the people on the ground who live the problem may not have the best analysis, but they certainly do have the best understanding of what’s happening. We need to stop thinking that solutions always come from above. But we also need much better ‘translators’ -- leaders who can transform the language of citizens into the language of policy and vice versa. Otherwise, decision-makers will do the ‘translation’ based on the mental models they already have. Creating this new corps of ‘translator-leaders’ is our biggest challenge.”

The CSMD’s **impact on public discourse** in Morocco -- at a time where it competed for attention with a global pandemic and economic crisis -- is also considerable: 2500 written articles and 347 stories on national television, including a 90-minute special on the 2M television channel. The CSMD produced 51 hours of original content on its YouTube and social media channels (including a Facebook

page with 500,000 followers). An estimated 3.2 million Moroccans viewed this content, and millions more likely read or watched press coverage. Many participants in the CSMD's in-person outreach expressed a desire to participate more often and more fully in public affairs, a desire likely reinforced by the openness and empathy modeled by the CSMD members. Commission members and staff also report having developed their own capacities for citizen engagement as well as their commitment to Morocco; at least two members living abroad report planning to move back to their home country to participate more fully in public life.

The Commission thus demonstrated the two value propositions of collective intelligence for government: their methods **accurately and creatively reshaped public policy, while strengthening relationships of trust, openness, and respect**. As to its ultimate impact, the coming months will provide a crucial test. "When our country became independent in 1956," explains one member, a historian, "the current King's grandfather, Mohammed V, declared that independence was the lesser battle, and that the greater battle would be developing Morocco. Similarly, creating our report was simple compared to the change management we will need now."

In 2021, will the nation's leaders take active steps to transform a "culture of conformity" within their institutions into a "culture of leadership, initiative and performance"? Will citizen expertise be sincerely valued and thoughtfully integrated into public decisions? Will sufficient resources be invested in building new competencies, platforms and processes? These are the questions that will determine whether Morocco's new model of development, so painstakingly created, will achieve its promise. The daring spirit and tireless diligence of these 36 commissioners, and the patriotic commitment of the thousands who participated, give reason to hope.

To realize the ambitions expressed in Morocco's New Model of Development, a challenging and exciting process of transformation lies ahead. In this process, designers of collective intelligence in Moroccan government and society should consider five key learnings from the CSMD's work in 2020:

1. **The power of systems thinking.** While it is too early to judge the performance of the new development model, the report shows that the CSMD succeeded in creating a system-wide view of Morocco's development. The report evinces a clear and convincing theory of change: the negative representations in the minds of stakeholders, as well as systematic knots and specific levers of transformation. These foundations are critical for policymakers to create the right indicators for each project and policy.

2. **Flexibility and experimentation produced greater diversity of contributions.** Though the covid-19 pandemic posed many challenges to the CSMD's work, it also validated their pre-pandemic choice to create and refine CI methods in an iterative way. Planning regular self-evaluation exercises, keeping an open mind, and leaving time and resources for later adjustments is critical.

3. **To achieve scale for aggregative methods of CI, dedicated resources are needed.** Even the best digital tools do not mobilize the public by themselves. Careful user testing, dedicated staff, and community coalitions to amplify calls to action are each critical to scaling up citizen engagement on online platforms. Use coalitions. A combination of open-source and proprietary tools may be needed.

4. **For deliberative channels, cultural habits can impede or facilitate the quality of engagement.** The guided storytelling format in the *séances d'écoute* succeeded by drawing on a rich cultural context of community storytelling, whereas the town-hall format of the *rencontres citoyennes* tapped into more "protocol-heavy" habits and expectations. These cultural elements should be thoughtfully integrated into choices about the design of citizen engagement.

5. **To optimize internal collective intelligence, a good fit is needed between time, policy scope, and number of participants.** Even with the extension of the CSMD mandate, time pressure was significant, and the broad scope created challenges as well as opportunities. Deference to colleagues with specific

expertise is helpful, as well as openness to revise one's own opinions. Skilled facilitators can make small-group deliberation more efficient as well.

6. **To build capacity, combine scientific insights with peer learning.** No collective intelligence process is perfect. In addition to their transparency and neutrality, the CSMD was exemplary in their openness to try new scientific methods and tools, to experiment, and to learn from their mistakes. Documenting key design choices, and evaluating them later with honesty, is what enables collective learning in government.

We give the final word to a young resident of Fès, who participated in the *rencontre citoyenne* organized for her city: "Citizen participation must not only be stating our opinions; it must take into account all the interactions at work in the final decision. The citizen should be included in public decisions; without this, it will be impossible for him to embrace them."[127]

127 ("La participation citoyenne ne doit pas seulement être une prise d'avis sans une réelle prise en compte des échanges que nous avons dans la décision finale. De manière générale, le citoyen doit être inclus dans la prise de décision politique: sans cela, il est impossible de le faire adhérer.")

APPENDIX. DESIGN PRINCIPLES FOR COLLECTIVE INTELLIGENCE

Collective stupidity is every bit as common in our world, unfortunately, as collective intelligence.[128] Many well-intentioned efforts by governments to include citizens do not realize their potential. Increasingly, empirical research in collective intelligence studies -- by cognitive scientists, technologists, political scientists, and organizational psychologists, among others -- offers new insights for the design of collective intelligence at small and large scales.

In these studies, both inside and outside the laboratory, we see four main indicators emerging in the success or failure of a collective intelligence process: (1) The **scale** or number of individual minds at work; (2) the **cognitive diversity** of those individuals; (3) the **quality of engagement** with each participant; and (4) its real and perceived **impact** on political realities. Those designing collective intelligence processes for government will need to carefully consider each of these four factors, and decide how each should be weighed given the challenge at hand.

I present here a brief overview of the state of the art on recent studies in collective intelligence and how they inform each of these four indicators. As we will see, answers to these questions will depend on many factors including the phase of the policy cycle -- large-scale participation may be more important for agenda-setting than for oversight activities, for example, where engagement quality is paramount.

A key distinction arises between aggregative and deliberative methods of CI. Aggregative methods produce the effect of collective intelligence by pooling together citizen contributions given in the form of individual observations, ideas, preferences, or predictions; these methods may be particularly useful at the data-gathering or agenda-setting phases of a policy cycle, or to evaluate the likelihood that a proposal will succeed. Deliberative methods, on the other hand, produce the effect of collective intelligence by bringing different minds together to generate ideas or proposals that no individual could create alone; these methods lie at the heart of citizens' assemblies and mini-publics, whose goals often include easing polarization or breaking through a political stalemate.

In the case of the Moroccan CSMD, whose mandate was to gather ideas and make recommendations for a new model of national development, each of the following four factors played a decisive role in creating its collective intelligence methodology.

1. What scale of participation is needed?

Thinking together requires a critical mass of minds at work. But how many is enough? One could say that even in solitary reflection, humans are provided with a "collective advantage" by incorporating the accumulated knowledge of many others in our own thinking: our peers and teachers, as well as past generations of scientists and thinkers whose ideas we employ.[129] Humans take advantage of "other minds" in face-to-face settings from as early as three years of age.[130] There are natural limits to the number of people with whom we can have a productive real-time conversation: according to some

128 The classic studies of "collective madness" are Mackay 1841 and Le Bon 1895.
129 O'Madagain 2018.
130 Köymen et al. 2020.

studies, we may have a natural tendency to develop ideas in groups of four or five,[131] while seven or eight have been proposed as optimal numbers for team performance.[132] Some ways in which humans can be collectively intelligent, however, can grow in strength as the size of the group increases. The "Jury Theorem" of 18th-century statesman and mathematician Nicolas de Condorcet demonstrated how a wise crowd could emerge from a collection of slightly better-than-random judgments, and how the reliability of the outcome increased as the size of the group increased.[133] Similarly, the English polymath Francis Galton observed early in the 20th century how a crowd of 800, many "non-experts", each trying to estimate the weight of a large cow at a country fair in Cornwall, collectively arrived at the right answer.[134] For both Condorcet and Galton, given the right conditions, more minds produce better results. Larger, more connected human groups may have been critical to the accumulation of cultural knowledge over generations.[135] The trick for taking advantage of these discoveries, however, is establishing the right conditions under which the opinions of many people can in practice be brought together to yield a superior collective outcome.

These arguments for the value of scale most clearly apply in the case of **aggregative collective intelligence**, in which contributions are given independently and citizens do not influence one another. For such aggregative methods -- such as data-gathering practiced by SafeCast, prediction markets like Hypermind, or Ebola tracking in Sierra Leone -- digital platforms can lower the marginal cost of each new contribution to near-zero. Where citizen data (observations, preferences, or predictions) can be neatly synthesized, and that data is the aggregation of many individual contributions, increasing scale may thus be the easiest path to an intelligent outcome. Scale may also be a principal driver of quality in "peer production" projects like Wikipedia where contributions take different forms, draw on decentralized sources of expertise, and fit together into a cohesive whole.[136]

Conversely, increasing scale may reduce process quality when other costs come to bear. In the case of a "FixMyStreet"-style platform, such costs may include the time and material to respond to a new citizen complaint; the call for proposals in an open innovation process may produce more ideas than can be reviewed by the project team; or as with the *Grand débat national*, a sufficiently large quantity of open-text citizen contributions can make manual review impossible. A large scale of open-text submissions may require the use of natural language processing (NLP) tools which, while rapidly improving, may fail to capture the tone or upshot of individual submissions.[137] In such cases, the supply of government resources -- especially the team members equipped to review and respond to written contributions -- should be optimized to meet different scenarios of citizen demand.

Some experiments have suggested positive scale effects for **deliberative methods** of collective intelligence as well. Gallupe et al. (1992) designed two concurrent experiments comparing the number and quality of unique ideas generated by groups of varying size given the same brainstorming challenge, and using both online and in-person interaction; the larger groups in both experiments generated more unique ideas and more high-quality ideas.[138] James Fishkin, democratic scholar and pioneer of deliberative polling, has argued for the importance of recognizing the trade-offs between deliberation quality,

131 Krems et al. 2016.
132 See Miller 1956; Wheelan 2009.
133 His equation showed, for example, that if each member of a 1000-person jury had merely a 51% chance of deciding a case correctly, the answer of the jury's majority would be correct more than 70% of the time; a majority of 10,000 such jury members would be right 98% of the time. Importantly, a strict condition for this effect was the sincerity of each judgment (i.e. no "gaming the outcome") and the non-influence of any jurymen over his peers. List and Goodin 2001; Ladha 1992.
134 The median of guesses was 1,197 lbs. and the cow's actual weight was 1207. Galton 1907; Surowiecki 2004.
135 Derex et al. 2013; Derex and Boyd 2016.
136 Benkler et al. 2010.
137 See Bird 2006.
138 Gallupe et al. 1992. This "epistemic" case for democracy -- that under certain conditions, a larger number of citizens is more likely to arrive at the truth -- is central to Helene Landemore's argument for wider citizen participation in Democratic Reason (2013).

political equality, and openness of participation -- what he calls the "trilemma of democratic reform."[139]

Nevertheless, scale can pose a risk to CI processes where participants are aware of, and thus can be influenced by, one another's contributions. Such awareness can produce **"herding effects"** in which submissions that diverge from the majority view are tacitly (or explicitly) discouraged, or "polarization effects" in which competing camps mobilize in favor of their side rather than placing themselves more sincerely on a nuanced spectrum of opinion.[140] In such instances, process design can raise the probability of sincere and independent judgment, for example, by making a synthesis of contributions public only after all submissions have been gathered, or asking for submissions in a manner that depolarizes or reframes the policy issue.[141] Inviting contributions asynchronously instead of all at once may also "lower the temperature" of a process that features sharply diverging views, and provide additional time for reflection.

Two political factors, each linked to the social dimension of CI, complement these scientific insights regarding process scale. First, broad participation in a public process may **increase the perceived legitimacy**, and thus the political sustainability, of that process. For example, the remarkably high voter turnout in the participatory budgets of Cascais, Portugal, is considered a key factor in its durability in a political environment where other cities' processes have waxed and waned.[142] Organizers of the vTaiwan platform consider the breadth of its user base a major factor in earning political support from the Taiwanese parliament and government agencies.[143]

Second, a process that earns **broad participation from underrepresented groups** such as women, young people, and lower-income communities, may itself be a desirable policy goal. Such considerations animated the first participatory budgeting process in Porto Alegre in the early 1990s. After Brazil's military government had systematically disfavored members of lower-income communities, leaders in Porto Alegre were convinced both by the moral argument that civic participation could help redress past injustice, and by the pragmatic argument that these communities were more likely to know what investments were needed most.[144] Conversely, participatory processes that declare their intent to gather a critical mass of citizens, and fail to do so, risk being perceived as illegitimate in their outcomes. Such a phenomenon has caused many CI processes to become "one-off" exercises due to lack of citizen interest or capture by a single interest group.

2. How will the process achieve cognitive diversity?

One of the signal contributions of collective intelligence studies is revealing the importance of diversity in groups. In a series of studies, Hong and Page (2004) demonstrated the existence of a **"diversity bonus"** -- that as problems grow in complexity, a diversity of cognitive skills may produce greater benefits to overall performance than the sum of individual abilities.[145] Cognitive diversity, in Page's definition, relates to different ways of thinking, especially the representation and generation of knowledge. These different ways of thinking may correlate with observable qualities such as age,

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139 Fishkin 2011; these tradeoffs are addressed extensively in OECD 2020.
140 See Lorenz et al. 2011.
141 For example, following the completion of the *Grand débat national* in April 2019, the French government published a synthesis of contributions on its platform and an open-access dataset for public analysis; see https://www.gouvernement.fr/on-fait-le-point-sur-la-restitution-du-grand-debat-national.
142 Falanga et al. 2020.
143 Interview of Audrey Tang by Beth Simone Noveck, NYU GovLab, 20 September 2018, available at https://sayit.pdis.nat.gov.tw/2018-09-20-conversation-at-new-york-university. See generally OECD 2020, ch.4.
144 Gret and Sintomer 2002.
145 Hong and Page 2004.

gender, and language group, but so too may two individuals with those same observable qualities use entirely different ways of thinking about a problem.

Our **"cognitive repertoire"** consists of the distinct tools we bring to an intellectual challenge,[146] and the cognitive diversity of a group can be measured in the total number of distinct tools in the repertoire of at least one member.[147] As such, individual performance and collective performance on a complex task can be uncorrelated; a group of individually high performers can be outcompeted by a more diverse group of individually low performers; and adding diversity to a group can be more beneficial than adding expertise.[148] Importantly, different types of tasks benefit from the diversity of distinct cognitive tools: for example, a brainstorming task may benefit from diverse heuristics and bodies of knowledge, while a prediction task may benefit from diverse information sources and mental models.[149] Moreover, the benefits of cognitive diversity do not require each participant to be aware of the entire set of issues. It can occur even when participants are only focused on a specific set of "local issues," as long as the group itself has sufficient diversity overall.[150] Prediction markets harness cognitive diversity through the principle of compensatory errors, i.e. that a sufficiently diverse population are equally likely to produce errors in both directions, yielding a collective prediction of greater accuracy.[151]

Researchers have drawn a critical distinction **between cognitive diversity and "identity diversity"**, which balances different genders, cultural identities and ethnicities, among other categories. While these two distinct types of diversity often overlap -- people of different cultural backgrounds often bring a fresh perspective to a policy problem -- identity diversity does not itself guarantee cognitive diversity. As such, designers of a CI process should be aware that a "representative sample" of citizens that draws only on demographic data may or may not produce a cognitively diverse group.

How then to assemble a cognitively diverse group of citizens? One method, for processes using a sortition-based or "mini-public" approach, would be to create a filter using only those criteria likeliest to correlate with cognitive diversity based on the best available evidence and on the task at hand. Page (2017) argues, for example, that a diversity of life experiences may be more important than physical qualities like age and gender in creating cognitive diversity.[152] Extra resources may be invested in outreach efforts to encourage participation from populations in these categories; New York City's PB process recruits volunteers from 14 language groups and sends them with mobile voting kiosks to cultural centers and places of worship.[153] Alternatively, based on the evidence regarding cultural transmission, cognitive diversity may be favored by organizing citizens in smaller groups, maximizing the circulation of ideas within each group, and occasionally passing high-potential ideas from one group to another.[154] A third method could be to ask citizens to participate in a "cognitive self-diagnostic" to help organizers track diversity in the pool of participants. A short questionnaire could provide some indication of the person's cognitive repertoire, which could be used for the purposes of re-weighting a sample -- a common technique of public pollsters, here applied to reinforce group intelligence and, depending on public expectations, the legitimacy of the process.[155]

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146 Page's list of cognitive repertoires includes the information at our disposal; our areas of practical knowledge; the heuristics, representations, and categories we use to interpret information; and the mental models we use to make predictions. See Page 2017, ch.2.
147 Page 2017, ch.3.
148 Krause et al. 2010; Krause et al. 2011.
149 Page 2017, ch.3.
150 Stiles and Cui 2010.
151 See Servan-Schreiber 2018. While empirically effective on a wide range of problems, in two prominent recent examples -- the Brexit vote and Republican primary of 2016 -- prediction markets were less accurate than polling averages in forecasting the outcome. For an analysis of these two cases, see https://www.economist.com/graphic-detail/2016/06/24/who-said-brexit-was-a-surprise.
152 Page 2017, ch.4.
153 See Hagelskamp et al. 2020. When robust sampling is impossible, some research suggests that an open call to participation with outreach to promote diversity may achieve better results than flawed random sampling. See Griffin et al. 2015.
154 See Derex and Boyd 2016; I am grateful to James Winters for this suggestion.
155 This re-weighting approach, though scientifically sound, could risk violating the moral intuition common to liberal de-

On the whole, it will be most difficult to ensure cognitive diversity for "lower-intensity" aggregative methods like data-gathering or agenda-setting. This may not pose a problem: for processes that draw purely on observation (e.g. the Safecast platform to collect measurements of radiation and air quality), cognitive diversity may be a less important driver of outcome quality than scale and accuracy of individual contributions. For processes that ask for preferences, feedback, or short-form ideas, demographic indicators may provide a rough estimate of cognitive diversity, subject to the considerations above. For "higher-intensity" CI methods that rely on deliberation or longer-form ideas, process designers should consider some form of diagnostic questionnaire to give a measure of diversity, and conduct extra outreach to fill in the gaps that emerge.

Cognitive diversity must also be distinguished from **the political notion of representativity**, i.e. who is entitled to speak or act on behalf of a certain group. As Landemore points out, current debates over political legitimacy and representation are rooted in similar arguments in the late 18th century, as new frameworks of government were set in place in the West. The continental scale of the new American and French republics, exponentially larger than their ancient and medieval counterparts, sparked keen debates over how to ensure the people's sovereignty over their government. Some, like Condorcet or the American anti-federalists, argued that free citizens should participate in government directly through sortition or "nested" assemblies.[156] However, these voices largely lost out to others like James Madison who insisted, by way of European parliamentary tradition, that a free people could only "govern" through elected representatives.[157] As state power accumulated in the 19th and 20th centuries, this "elective" legitimacy was joined by the "bureaucratic" legitimacy of civil servants.[158] Nevertheless, despite extensions of voting rights, the most anti-democratic aspects of the parliamentary tradition -- and especially, the dominance of an aristocratic, wealthy, and mostly male elite -- are still in evidence today.[159] Wherever one stands on the moral legitimacy of "modern" republics, science is revealing their weakness from a cognitive perspective.

Here again there may be important **political considerations** that may extend beyond, or in the worst case conflict with, scientific ones. While it is certainly possible that certain politically desirable indicators of diversity -- such as language group or religious background -- may increase cognitive diversity, it may equally be true that other indicators such as age or educational attainment may produce a much greater "diversity bonus." Thus, it is possible that the indicators of diversity that maximize process legitimacy within a given political culture may or may not overlap with those that will maximize cognitive diversity. Similarly, a participatory process based on open calls for contributions, and thus relying on a self-selected sample of citizens, may also not maximize diversity. Some critics of the *Grand débat national* made the point that the exercise was biased toward those likeliest to have a free evening and the interest or confidence to participate -- i.e. those who were economically better-off, more educated, and enjoying more social connections in their place of residence.[160] The organizers of the *Grand débat* responded to this challenge by organizing regional "citizen conferences" based on a random sample selected by telephone.[161] Designers of future CI processes may find it similarly useful

mocracies that altering the "one person one vote" principle in any public process is unfair. Another risk to a self-diagnostic approach would be priming the participants to develop a certain view of the subject at hand, thus making them less open to changing their minds through the deliberation process; I am grateful to Claudia Chwalisz for suggesting this point.

156 This argument was highly influenced by the arguments of Jean-Jacques Rousseau in *Le contrat social* (1762), arguing that the "general will" (*la volonté générale*) of a political community could only be formed by the people acting directly. See Rousseau 2001.

157 See Stasavage 2020.

158 See Weber 1947.

159 As an example, white men represent around 30% of the US population but occupy 71 of 100 seats in the US Senate; see https://www.theguardian.com/commentisfree/2019/may/20/rich-white-men-rule-america-minority-rule.

160 See O. Benis, "La méthode du 'grand débat national', critiquée par les 'gilets jaunes' mais aussi par ses garants," France Inter, 8 April 2019, available at https://www.franceinter.fr/politique/la-methode-du-grand-debat-national-critiquee-par-les-gilets-jaunes-mais-aussi-par-ses-garants.

161 Indicators of representativity used for these *conférences citoyennes*, featuring 50-70 participants each, were age, gender, socio-professional category, *département* (sub-region), and size of *commune* (locality); see https://www.liberation.fr/

to combine self-selected and sortition-based exercises with more rigorous measures to track cognitive diversity, fill in gaps, and report on the outcomes.

Finally, it may be politically desirable to **consult stakeholders collectively**, rather than as conduits to the individuals within them. This may be due to the special standing of the organization within society: the public may consider it "proper" that certain groups be consulted no matter what they say. Whether or not these groups are cognitively diverse, therefore, inviting their views may improve process legitimacy in the public eye and remove a potential "blocker" at a later stage.[162] Moreover, it may be both politically and practically useful to consult certain groups or stakeholder populations most likely to be impacted by a given policy, so that they can provide evidence that can inform the public choice.[163] For example, a process to regulate the telecommunications sector should consult the range of companies likely to be affected and consumer groups as well; regardless of who decides, the quality of the resulting policy should benefit from diverse sources of local information and bodies of specialized knowledge, two key indicators of cognitive diversity according to Scott Page.[164] For a multi-stakeholder consultation, therefore, it is diversity of local information and knowledge bases that may improve outcomes from a technical perspective, while politically the process will benefit from consulting groups that command respect within society.

3. What is the quality of engagement with each participant?

In a seminal study, Woolley et al. (2010) found that the collective intelligence of small groups was driven less by the average intelligence of group members, and more by the social perceptiveness of members and the quality of information flow within the group.[165] In the case of that experiment, the quality of engagement was measured by the relative equality of speaking time within the group. For designers of CI processes, a number of factors may determine **how to optimize each "touch point" with citizens**: the richness of content solicited per unit of time required, the sincerity or accuracy of the content, independence from social influence, and the fidelity and accessibility of the tools being used. As above, factors driving the quality of engagement may look quite different depending on the scale of the process and whether aggregative or deliberative methods are at play.

CI processes can demand widely different **investments of time** from citizens, ranging from a few seconds to upload a smartphone photo and post a comment, to several months of work in a citizens' assembly. The goal of a designer should not be to standardize the amount of time each citizen invests, but rather to maximize the richness of the contribution within the appropriate time-frame, whether this is measured in days, minutes, or seconds. For "lighter-intensity" CI methods, digital tools can help achieve this fit: in a few moments, an image or social media post can help both citizens and government entities access critical information about what's happening.

Conversely, a national referendum, though requiring only a few minutes to vote, may end up producing collective stupidity rather than intelligence if a complex issue is boiled down to a simple "yes" or "no". In extreme examples such as the Brexit referendum of 2016, such oversimplification

france/2019/03/13/conferences-citoyennes-le-grand-debat-par-tirage-au-sort_1714353/.

162 Conversely, to the degree that a certain group is considered illegitimate in the eyes of certain sections of the public (for example, groups considered as criminal or extremist), consulting them may harm perceptions of the process.

163 In deliberative processes such as citizens' assemblies, stakeholders play a role different to their usual method of participation in policy making: as evidence-givers to citizens. One reason why these processes can help reduce corruption and increase integrity is that stakeholders go through a public process of giving evidence to citizens, rather than direct back-channel access to policy makers. See OECD 2020.

164 Page 2017, ch.2.

165 Woolley et al. 2010.

may end up dividing society into two diametrically opposed "camps", with disastrous results for social cooperation and trust. For CI processes in general, therefore, an important best practice is **to avoid "yes/no" questions where possible**, since the type of complex problem best served by collective intelligence are those least likely to lend themselves to a binary choice.[166] Using multiple-choice or Likert-scale questions can add significant richness to text-based contributions while not asking substantially more time from participants.[167] Two methods of question formulation deserve special mention. In the D21 or Janeček method, an algorithmically optimal number of "positive" and "negative" votes are given to a respondent depending on the number of options.[168] This method allows to identify areas of consensus (options receiving large numbers of plus-votes or minus-votes only); areas of lower relevance (few plus- or minus-votes); and controversy (large numbers of plus-votes and minus-votes).[169] Another type of question to consider is the Net Promoter Score (NPS), most often in the form "Would you recommend [X] to a friend or colleague?" Used since the 2000s by Fortune 500 companies, the NPS has been considered the single most important indicator of measuring the quality of a product or service.[170] In recent years, it has increasingly been applied to measure the quality of public services and programs.[171]

Finally, **open-text questions** can improve the richness of content in a given unit of time. Even in shorter questionnaires, adding an "other" option with a space to elaborate, or an open-text question for "other ideas" may have two virtues. It may generate new ideas outside the options made available; it also offers a psychological "escape valve" for those respondents who may be frustrated if they cannot put an idea in their own words. Adding open-text questions to a survey or questionnaire can significantly increase the time needed to review the data, but may thus be worth the additional effort if done judiciously. As mentioned above, natural language processing tools (NLP) can also assist in analyzing open-text contributions, but have their own associated costs and limitations.[172]

Will a process that **favors interaction over independent judgment** raise collective intelligence or harm it? The science suggests that social influence can either improve or undermine collective performance, depending on the task and method of organization. Market "bubbles", "echo chambers" and "groupthink" are well-studied phenomena that each concern the negative impact of exchanging information and preferences within a constrained group; in these cases, the benefits of cognitive diversity (e.g. a diversity of local information or life experience) may go missing to the extent that minority views are discouraged or prematurely drowned out.[173] For tasks involving peer production, on the other hand, recent studies have demonstrated that connected individuals can outperform disconnected ones due to the benefits of collective learning.[174] "Swarm platforms" allow users to interact concurrently to explore decision-spaces together, helping structure a collective choice.[175] Alternatively, collective knowledge

166 A "yes/no" referendum may have utility as a final validation point of a longer deliberative process. The above-discussed examples from Ireland were distinguished by the extensive and transparent citizen deliberations that preceded them and a relatively unpolluted information environment. The same cannot reasonably be said for the UK's referendum on EU membership in 2016, for which politicians chose the formulation of the question without citizen input.

167 A Likert scale question asks respondents to place their answer on a numerical scale, e.g. "On a scale of 1 to 7, seven being the best, how efficient was your trip to the post office today?"

168 For example, "Which of the following five qualities do you care about most in a visit to the post office? Give a 'plus' to the two most important and a 'minus' to the one least important. (a) Friendliness of staff, (b) Waiting time… etc." While an explanation of the "plus" and "minus" system requires some extra time for those unfamiliar with the technique, in my experience in more than 10 countries, familiarity is quickly acquired. For more information on the D21 method, see https://www.ih21.org/en/voting-method-for-everyone.

169 See also the quadratic voting method proposed by Posner and Weyl 2017, in which individuals can exchange influence on issues less important to them for influence on those more important to them.

170 Reichheld 2003; for applications of Net Promoter Score to generating insights into public problems, see https://giving-compass.org/partners/mutual-accountability/if-you-dont-live-there-how-do-you-know.

171 See, e.g., Koladycz et al. 2018.

172 For advantages and disadvantages in analyzing Arabic text, see Farghaly and Shaalan 2009.

173 Janis 1972. Sunstein 2002 found a striking empirical regularity that under certain circumstances the deliberation tends to move groups, and the individuals who compose them, toward a more extreme point in the direction indicated by their own judgments. His arguments regarding group polarization have been a subject of heated debate; see Landemore 2013.

174 Becker et al. 2017.

175 Rosenberg and Pescetelli 2017.

can be generated through a "decentralize, then reintegrate" model, an approach which has shown some promise in research settings.[176] Transmission chains of individuals may be better at solving simpler problems, whereas groups of independent problem-solvers may be preferred for a more complex challenge.[177]

For the most complex public problems, producing innovative ideas may require individual ideas to be recombined, challenged, or reformulated, requiring a high quality of interaction and more time.[178] Face-to-face interaction is considered the most efficient and comprehensive way to share information in a group, including non-verbal information that often provides critical context that goes missing in text-based exchanges.[179] For these "higher-intensity" CI methods, it is critical to select the right facilitation methods and put the right facilitators in the room. In business settings, studies have shown that high-quality facilitation is the single most important factor in whether a meeting is perceived as effective and worthwhile.[180] A growing literature is pointing to the important role of facilitation techniques in the success or failure of online collaboration as well.[181]

Researchers and practitioners of deliberative democracy have developed **a range of facilitation methods** to raise the quality of the experience for each participant and the quality of the collective outcome.[182] These methods include guided storytelling, developing ideas through lateral thinking,[183] and creating psychological safety that permits quieter voices or minority views to be heard.[184] As discussed above, giving citizens access to "issue briefs" or experts is another way to raise the quality of their engagement, but careful consideration should be given that the information not bias them toward a particular point of view. Overall, researchers continue to disagree on whether deliberative exercises can eliminate groupthink, echo chambers, or polarization effects; nevertheless, practicing well-tested facilitation techniques may reduce the impact of these phenomena while harnessing the benefits of collective thinking.

Finally, **the fidelity and accessibility of digital tools** may play a decisive role in the quality of citizen engagement. The question of accessibility has several dimensions: does the citizen have access to the internet, and to a device that can be used to participate effectively? Is he or she literate in the functions required? If a dedicated platform or application has been created, has the user experience (UX) been well designed and tested? Due to the massive reach of proprietary social media platforms like Facebook and Twitter, many governments have relied on these channels to engage the public; in addition to the limited functionalities of these platforms for surveys and discussion, serious concerns over data privacy, algorithmic bias and the spread of misinformation are all to be recognized.[185] Open-source tools like Consul and Decidim are valuable alternatives, but a creative outreach strategy may be needed to acquire a critical mass of users.[186] These platforms, as well as proprietary civic technologies like

176 On the optimization of group decision-making, the team of Xi'an Jiaotong University simulated it in 2016. This agent-based simulation based on the "NK" model proved the effects of three different group structures on group performance when the decision problems are not independent: a centralized group in which group members make decision together; a decentralized group in which group is divided into several subgroups; and a temporarily decentralized group which starts out with a decentralized structure and later reintegrates. The results of simulation suggest that the reintegrated group is always the best of these three decision models no matter how complex the problem is, how many the groups are or how fast the individual learning rate is. See Xi'an Jiaotong 2016.
177 Yahosseini and Moussaïd 2020.
178 Page 2017, 85-118.
179 See Tannen 1992; Kruger et al. 2005; Turkle 2017.
180 Rogelberg 2019.
181 Asterhan and Schwarz 2010; Lampe et al. 2014.
182 See, e.g., Moore 2012; Steiner et al. 2017; Spada and Vreeland 2013.
183 Classic studies of creativity and group dynamics include De Bono 1970 and Kantor 2012.
184 Edmondson, A. and L. Zhike 2014; Van der Linden et al. 2000.
185 See Helbing et al. 2017.
186 An example of such a strategy was "Decide Madrid," an initiative for citizen proposals and participatory budgeting, launched via the Consul platform in 2015. In its first year the site attracted 400,000 registered users. See https://www.nesta.org.uk/feature/six-pioneers-digital-democracy/decide-madrid/; https://www.involve.org.uk/resources/case-studies/decide-madrid.

CitizenLab, may come with the benefits of a user community of governments and advocates that can share knowledge and best practices. If a new CI tool is to be developed, it may be critically important to conduct UX testing well in advance, and build in time and resources for public feedback and versioning. In the case of communities like vTaiwan, raising facilitation quality and developing high-quality digital tools are mutually reinforcing ways to build a loyal base of engaged citizens.

4. How will the process achieve sustainable impact?

A well-designed collective intelligence process is one that is **conceived as part of a system-wide adaptation**, not a one-off exercise. As shown in the cases above, the technical and social dimensions of CI can be mutually reinforcing: a baseline of trust is necessary to elicit citizen participation; citizen participation can make more effective policy; and better policy strengthens public trust while expanding capacity for governments to involve citizens further.[187] This potentially virtuous cycle breaks down, however, if citizen participation has no real impact. As a recent critical study of e-participation initiatives by the UN Office of Social and Economic Affairs observed, "participation is fundamentally more difficult to manage than standard administrative transactions, because individual feedback is expected from those who participate, as well as signals that their contribution is taken into account."[188] Politicians may be tempted to say that they have consulted the public while carrying on with the policy they preferred.[189] Weak or nonexistent impact of a CI process can badly damage the credibility not only of that process, but of any government effort to engage citizens. For this reason, it is imperative for process designers to consider ahead of time which indicators of impact will be the most important in a given exercise, how those indicators will be properly measured, and how results will be communicated back to individual contributors and the general public.

In this, care should be taken **not to confuse outputs, outcomes, and impacts**. For example, outputs of a participatory budgeting process include the number and quality of project proposals, the number of participants in the proposal and campaigning phases and the time invested, and the number of voters in the selection phase. Outcomes of the process are the selected projects (for example, a new community garden), and the immediate results of their implementation. Impacts could be a healthier, more bonded community, with more children educated in local food production. Certain processes are designed to produce certain outputs -- in this example, a PB process is designed to produce PB project proposals -- but those outputs should not be confused for impacts. Citizens are more likely to participate in a PB process not because of the number of projects from the previous year, but rather if the winning projects improved the quality of life in their community in some measurable way.[190]

At least **three kinds of impacts** are worth considering in advance. First and most directly, what will be the impact of the CI process **on the policy which results**? As seen above, the most successful processes are those for which a clear commitment from political stakeholders is made in advance. Binding commitments from politicians to honor the preferences of citizens are extremely rare; PB processes, in which a specific budget envelope is typically allocated by a mayor or council prior to launch, are a noteworthy exception. In the Ostbelgien model, the citizens' council -- a standing body composed of participants in previous citizens' assemblies -- has the power to create new citizens' assemblies and select topics, with input from the general public. In the Brussels case, by contrast, it is the parliament

187 See Pogrebinschi and Ryan 2018.
188 Le Blanc 2020.
189 See Font et al. 2018. A good case study of negative outcomes is the UK government's Red Tape Challenge (failed to lower costs, anonymity made organizational interests less transparent, no deliberation, low impact on executive decisions): http://www.transcrisis.eu/wp-content/uploads/2015/10/Lodge_et_al-2015-Regulation__Governance.pdf
190 See Sjoberg et al. 2017.

office that selects and defines the topics for each assembly.[191] In both cases, the elected council is not legally required to implement the recommendations of the citizens' assembly, but they are required to publish a report within a set period detailing what steps have been taken to address the recommendations. An appropriate fit must also be achieved between policy impact and process cost; the more costly a process is to design and implement, the greater the corresponding impact should be on the policies concerned.[192]

A second class of impacts are those **on the community and on key stakeholders**. Recent studies indicate that participatory methods may play a positive role in improving public health, lowering poverty, raising tax compliance, reducing public corruption, and achieving a fairer redistribution of public resources.[193] Collective intelligence designers should reflect in advance on which impacts are most important. Will the policy produced by the collective intelligence of the community actually raise the quality of life in that community? Will it serve to benefit some parts of the community and not others? Will it raise the capacity of public actors to engage citizens in the future? For each of these questions, clear indicators should be defined, with plans to take measurements at the beginning and end of the process where feasible.

Finally, one should consider the impact of the CI process **on its participants**. There is a growing body of evidence that participating in a civic process may have positive effects on knowledge of public affairs and feelings of personal efficacy;[194] on critical thinking skills;[195] on empathy and social trust;[196] on behaviors like voting, volunteering and charitable donations;[197] and on perceptions of government.[198] These positive effects may extend beyond those directly participating to the public at large.[199] With deliberative polling, there is significant evidence that the experience of hearing and discussing multiple perspectives can change the views of a significant number, even a majority, of participants. Even if this is not a goal in itself, this indicates the value of deliberative exercises in breaking out of an "us vs. them" mentality and finding new points of convergence on difficult issues. Regarding participants' satisfaction with the process itself, using a Net Promoter Score ("Would you recommend participating in a similar process to a friend or colleague?") may be a best practice to consider, as discussed above.

In the end, the impacts of a good CI process are unlikely to be linear. In her book "Thinking in Systems", Donella Meadows argues that democratic innovations should be evaluated as **a complex sub-system within a complex system.**[200] A linear approach to citizen engagement typically focuses on a single set of procedural outcomes: did the citizens' recommendations become law? Did the referendum pass or fail? Taking a systems approach to citizen engagement uses the realization that the elements of a complex policy problem, from climate to early childhood education, cannot be considered in isolation. An intervention at one point in the system may succeed or fail based on what is happening in a seemingly unrelated place. As such, designers of collective intelligence are encouraged to study the range of inputs and outputs into a public problem and identify the intervention points most likely to shift the system toward a more positive state.[201] This may require a broader view of short-term impacts. When

191 Ryan et al. 2020, 74-80.
192 One of the main criticisms levied against the UK's Red Tape Challenge was the unanticipatedly high level of resources needed to manage the process, and its disappointingly low level of impact on subsequent policy. See Lodge and Wegrich 2015.
193 See, e.g., Mansuri and Rao 2012; Arkedis et al. 2019; Banerjee et al. 2018; Olken 2019; Wong and Guggenheim 2018; Touchton et al 2019; Beuermann and Amelina 2018.
194 See Spada 2019; Eriksson, et al. 2019; Dryzek 2007; Daniels and Walker 1996.
195 See Fishkin 2018; Goodin and Stein 2009; Druckman and Nelson 2003.
196 See Kanra 2012; Reed et al. 2010; Grönlund et al. 2017.
197 See Grönlund et al. 2017; Kim 2006; Kukučková and Bakoš 2019.
198 Participation may even build trust in policy among those most susceptible to dislike government or "expert" decisions. See Cutler et al. 2008; Webb 2013.
199 Boulianne 2018.
200 Meadows 2008.
201 Meadows 2008 identifies 12 common intervention points for systems change, including the strength of negative feedback loops and the incentives and punishments created by rules.

evaluating a citizens' assembly we might ask not only about how political actors follow through on their commitments, but what new capacities and communications channels were developed for future exchanges among stakeholders.[202] So too may it require adding longer-term impacts into an evaluation framework, including measures related to the policy problem at hand (the technical dimension of CI) and to the relationships between government and key stakeholders (the social dimension).

Politics all too rarely lends itself to the broad view. Nevertheless, those who wish to change a system for the better must learn how to see it in its entirety; such a perspective gives the greatest chance for collective intelligence to flourish in this challenging century.

202 See Petts 2007. The quality of these processes may benefit from an increasing availability of trained practitioners. See Cooper and Smith 2012; Lee 2014.

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About Policy Center for the New South

The Policy Center for the New South (PCNS) is a Moroccan think tank aiming to contribute to the improvement of economic and social public policies that challenge Morocco and the rest of the Africa as integral parts of the global South.

The PCNS pleads for an open, accountable and enterprising «new South» that defines its own narratives and mental maps around the Mediterranean and South Atlantic basins, as part of a forward-looking relationship with the rest of the world. Through its analytical endeavours, the think tank aims to support the development of public policies in Africa and to give the floor to experts from the South. This stance is focused on dialogue and partnership, and aims to cultivate African expertise and excellence needed for the accurate analysis of African and global challenges and the suggestion of appropriate solutions.

As such, the PCNS brings together researchers, publishes their work and capitalizes on a network of renowned partners, representative of different regions of the world. The PCNS hosts a series of gatherings of different formats and scales throughout the year, the most important being the annual international conferences «The Atlantic Dialogues» and «African Peace and Security Annual Conference» (APSACO).

Finally, the think tank is developing a community of young leaders through the Atlantic Dialogues Emerging Leaders program (ADEL) a space for cooperation and networking between a new generation of decision-makers and entrepreneurs from the government, business and social sectors. Through this initiative, which already counts more than 300 members, the Policy Center for the New South contributes to intergenerational dialogue and the emergence of tomorrow’s leaders.

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