

# A collective response to our global challenges: a common good and 'market-shaping' approach

---

**Mariana Mazzucato**

Professor in the Economics of Innovation and Public Value

Founding Director, UCL Institute for Innovation and Public Purpose (IIPP)



UCL Institute for  
Innovation and  
Public Purpose

WORKING PAPER  
WP 2023-02

## About the Institute for Innovation and Public Purpose

The UCL Institute for Innovation and Public Purpose (IIPP) aims to develop a new framework for creating, nurturing and evaluating public value in order to achieve economic growth that is more innovation-led, inclusive and sustainable.

We intend this framework to inform the debate about the direction of economic growth and the use of mission-oriented policies to confront social and technological problems. Our work will feed into innovation and industrial policy, financial reform, institutional change, and sustainable development.

A key pillar of IIPP's research is its understanding of markets as outcomes of the interactions between different actors. In this context, public policy should not be seen as simply fixing market failures but also as actively shaping and co-creating markets. Re-focusing and designing public organisations around mission-led, public purpose aims will help tackle the grand challenges facing the 21st century.

IIPP is housed in The Bartlett, a leading global Faculty of the Built Environment at University College London (UCL), with its radical thinking about space, design and sustainability.

This IIPP Working Paper Series is published electronically at <https://www.ucl.ac.uk/bartlett/public-purpose/publications/working-papers>.

ISSN 2635-0122

This report can be referenced as follows:

Mazzucato, M. (2023). *A collective response to our global challenges: a common good and 'market-shaping' approach*. UCL Institute for Innovation and Public Purpose, Working Paper Series (IIPP WP 2023-2). <https://www.ucl.ac.uk/bartlett/public-purpose/wp2023-02>.

# **A collective response to our global challenges: a common good and ‘market-shaping’ approach**

Mariana Mazzucato, University College London

## **Abstract**

To effectively address the grand challenges of our time, we cannot simply tinker around the edges by fixing market failures. We must actively shape markets to deliver on the objective of generating more sustainable and inclusive growth. This paper argues that an objective-oriented economy requires a market-shaping approach; one that accompanies the concept of the public good with the common good framing that is needed to design the interface for this collaboration. This is about structuring the conditions and governance mechanisms that shape the capabilities, tools, institutions and partnerships needed to take concrete action. Building collective intelligence into these dimensions ex-ante is essential for maximising public value for all actors involved. This paper sets out how a market-shaping and common good framing can be conceptualised and brought together. Importantly, missions can be used to orient and coordinate policies, institutions, innovation and investments around clear, ambitious and measurable goals. Further, this paper addresses the implications for key global challenges, from climate change to pandemics.

## Table of contents

<i>1. A collective response to global challenges</i> .....	4
<i>2. The common good approach</i> .....	5
2.1. Public goods .....	6
2.2 The common good .....	8
<i>3. From market fixing to market shaping: a mission-oriented approach</i> .....	10
<i>4. Collective intelligence: shaping markets towards the common good</i> .....	11
4.1 Public sector capabilities .....	12
4.2 Tools.....	12
4.3 Institutions .....	13
4.4. Public-private partnerships: a new social contract .....	14
<i>5. The application of the common good, market shaping and missions to health</i> .....	15
5.1 Common good-oriented partnerships .....	17
5.2 A new global financial architecture for health .....	17
5.3 New legal blueprint for intellectual property .....	18
<i>6. The application of the common good, market shaping and missions to water</i> .....	19
6.1 Water as a global common good .....	20
6.2 From Sustainable Development Goals to water missions.....	22
6.3 Designing the common good into investments, institutions and partnerships for water .....	24
<i>7. Summary and conclusion: towards a new economics of water</i> .....	26

## 1. A collective response to global challenges

Governments around the world are increasingly seeking to promote innovation-led, inclusive and sustainable economic growth and transformation (Mazzucato 2018a). In the context of major social and environmental challenges, combined with an increasingly polarised international stage, setting a clear direction is more important than ever. Improving public health and water sanitation, mitigating climate change, reducing inequality and ensuring prosperity for all are extremely challenging goals, but they must be achieved to attain a more sustainable growth path. However, current governments are lacking not only a proactive and purposeful orientation, but also the policy frameworks needed to tackle contemporary challenges effectively.

The challenges we face today require many different types of individuals and organisations, rather than a single actor, to solve the problems together. Over 400,000 people were involved in making the moon landing happen; not only NASA, but also many different types of companies in industries as varied as aerospace, nutrition, materials and electronics. Even though today's multiple crises are not just technological in nature, there is a unique opportunity to transform challenges through a new framework around collective intelligence. Countries will require substantial collaboration, investment and innovation to tackle removing plastic from the oceans, building carbon-free regions, and finding solutions for water scarcity and water sanitation. Indeed, the United Nations' (UN) 17 Sustainable Development Goals (SDGs) are deeply complex problems that require investment and innovation, technological, social and organisational, by all actors in society. Countries have signed up to them, but in most cases are making little progress. The fact that we 'create' money for wars, but always find excuses for not spending enough money on social challenges, is revealing. More than ever, there is a pressing need to build capabilities, tools, institutions and partnerships by harnessing collective intelligence and mobilising collective action — the latter being a result of the former. This paper argues that this can be best achieved through the conceptual lens of the 'common good'. A common good approach is guided by a shared objective and can therefore mobilise, coordinate and evaluate economic activities around that objective.

To exemplify this point, during COVID-19, a fundamental weakness of the global approach to tackling the pandemic was focusing on developing the vaccines, rather than focusing on vaccinating the world, leading to broad inequity in access to and distribution of vaccines between countries. Had we emphasised a common objective, informed by collective intelligence, this would have enabled the necessary investments, innovations and collaborations to be shaped more adequately. Even though governments invested in basic research around mRNA technology, universities contributed know-how for vaccine development and pharmaceutical companies played a central role in preparing and distributing the vaccines for consumers, in the end the opportunity was missed. Today we have what Dr Tedros from the World Health Organization has called 'vaccine apartheid', because we allowed intellectual property rights to impede knowledge-sharing, hoarding to happen for nationalistic reasons and excess prices to be set by the large companies (Reuters 2021). Against the backdrop of collectively created value, vaccine apartheid represents the failure to embed a common good principle in the design of the collaboration.

What are common good principles? While public goods provide corrections to missing investments in the private sector — due to externalities and specific characteristics of goods and services (i.e. if they are non-excludable and non-rivalrous) — the common good is not a correction, but an objective.

Additionally, and even more importantly, the notion of a common good requires the incorporation of the necessary principles into the design of collaboration, institutions, tools and capabilities. As argued in *Mission Economy* (Mazzucato 2021), government should set clear, bold and measurable goals, and use missions to coordinate investments in innovation in an outcomes-oriented way. Missions are therefore not only objectives, but also frameworks that allow actors to design, implement and govern policy with these goals in mind. Modern-day missions should be in pursuit of the common good, oriented around solving the grand challenges of our time, such as those codified by the SDGs. To succeed, the collaborative endeavours required to achieve such missions must themselves be designed to reflect common good principles.

To successfully shape markets — guided by common good principles — collaboration and investment must go beyond the neoclassical foundations of market failure theory, which restricts government intervention to fixing market failures (Mazzucato 2016). If governments are to design the economy in new ways, they should be seen as market shapers instead of as market fixers. In other words, because markets are outcomes of how various actors and systems relate to one another, governments can use policy to shape such outcomes more deliberately. Rather than just de-risking the private sector or compensating for the absence of private sector investments — which inherently offers too little too late — governments can be bolder, more ambitious and more purposeful in their investments and policy decisions. A market-shaping approach emphasises the definition of clear policy objectives, as well as the collaboration, co-investment and co-design of actions required to achieve those objectives. Market shaping enables a bolder set of policy tools, providing a direction as opposed to a correction.

## 2. The common good approach

While it is clear that the Sustainable Development Goals (SDGs) require different actors to work together, the question is how? Effectively working towards **common good objectives** means setting the objective together — defining the ‘what’, and reorienting the ‘how’ to be truly collaborative and produce the outcome that is needed (for example, not just vaccines, but those that are accessible to all). Further, the rewards of innovation and investment, sometimes as profits for business, must be shared as socially as the risks taken to solve the problem. But what is the common good, how has it been discussed in the past and how does it compare to the other four dominant goods economics recognises (Murphy and Parkey 2016)?<sup>1</sup>

- **Private goods** are excludable and rival; they are goods that can only be consumed by a limited number of people at a time (Adams and McCormick 1987). They are often created with the objective of commercialisation, profit-maximisation or rent-seeking. Examples are clothing, food or theatre tickets.
- **Public goods** are non-excludable and non-rival, like clean water or sunshine. Because they are non-excludable, the private sector has little incentive to invest as they cannot appropriate the

---

<sup>1</sup> Murphy and Parkey (2016) provides a detailed analysis of the philosophical common good from an economics perspective. By drawing on the differences in their consumption characteristics, the paper argues that there are eight different views of common good and four types of economic goods.

profits (Samuelson 1954; Deneulin and Townsend 2007, p. 20; Kattel et al. 2018).<sup>2</sup> And because they are non-rival, one person’s access does not limit another one’s access. Both dimensions cause the public sector to correct market failures by investing or incentivising the private sector to do so (e.g. R&D tax credits). As clean air or plastic-free oceans need global action, the concept of the global public good is one that helps elucidate the deep international collaboration and investment that must be achieved to battle such problems (Kaul et al. 1999).

- **Club goods** are those that are non-rival, but excludable, like subscription TV services. One has to pay, but the access is open to all who can pay — and hence are non-rival. One person consuming does not reduce the ability of another person to consume as long as he/she pays.
- **Common-pool resources** are the opposite of club goods: they are rivalrous but non-excludable, like fisheries and forests. They are rivalrous because the benefits are not without limit: there are only so many fish in the sea. But the (limited) benefits are good for all. Elinor Ostrom won the Nobel Prize studying the idea of common-pool resources.

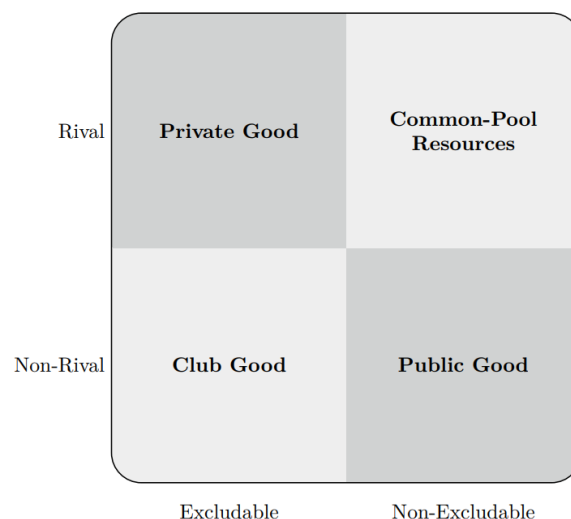


Figure 1. The four types of economic goods adapted from Hess and Ostrom (2003)

The common good builds on, but moves beyond, this classification. Incorporating a collective objective, it encompasses more than public good corrections. At the same time, it also moves beyond the idea of the common-pool resources, whose categorisation still builds on a market failure framing. The next two sections consider public goods and common goods in particular, showing how the idea of the global public good can help frame the deep collective intelligence required to solve the SDGs, from clean water available to all to vaccinating the world to reducing the digital divide.

## 2.1. Public goods

The dominant approach to public policy has its origins in neoclassical microeconomic theory and welfare economics. This approach emphasises the idea that, given certain assumptions, individuals pursuing their own self-interest in competitive markets gives rise to the most efficient and welfare-maximising outcomes (Samuelson 1947; Mas-Colell et al. 1995). Efficiency is understood in a utilitarian

<sup>2</sup> Samuelson (1954) first introduced the concept of ‘public good’ as goods that can be enjoyed and consumed by common individuals, but as such, the individuals’ consumption would lead to no implications or subtractions from any other individual’s consumption of the goods in question.

sense, whereby an activity is efficient if it enhances someone’s welfare without making anyone else worse off (so-called Pareto efficiency). Under these conditions, the role of government intervention should be limited to addressing instances where the market is unable to deliver Pareto-efficient outcomes. Such ‘market failures’ arise when there are information asymmetries, transaction costs and frictions to smooth exchange, or non-competitive markets (e.g. monopolies) or externalities, whereby an activity harms another agent not directly connected with the market transaction (e.g. pollution). In addition, public goods, such as defence or clean air, cannot be provided by the market directly, because they are non-excludable and non-rivalrous (if one person consumes it, it does not prevent another from consuming it) (Samuelson 1954; Deneulin and Townsend 2007, p. 20; Kattel et al. 2018).

As previously mentioned, *public goods* are non-excludable and non-rivalrous in their consumption — once produced, they can be consumed at no additional cost by the rest of society. The public good concept is well embedded in neoclassical economic theory, which argues that markets cannot supply them in a satisfactory manner, so government investment in, and management of, them is important. It goes further to argue that government should only intervene when clear market failures exist.

Recently this concept has been elaborated with an international dimension through the idea of global public goods (Kaul 2016). This work focuses on situations in which national governments cannot guarantee the provision of a public good due to the global interlinkages. A flood in one region of the world, for example, may have been caused by a emission-related change in the eco-system. Thus, global cooperation around climate change is required to reduce the impacts of that change (e.g. flooding) in any one region (Kaul et al. 1999). Collective (global) action is required for individual (national) benefit. Kaul et al. (1999) indicates the following as requiring an understanding of global public goods:

- 1) Natural global commons (the climate)
- 2) Man-made global commons (scientific knowledge)
- 3) Global policy outcomes (peace, financial stability)

The global feature means that no one government can deal with the problem, thus requiring the involvement of global organisations such as the United Nations or the Global Fund. Kaul et al. conclude with the following policy recommendations (Kaul et al. 1999, p. 450):

1. The creation of international laws which address the global nature of public goods
2. The promotion of participation of civil society at the global level and
3. Giving people and governments the necessary incentives to take action for the provision of global public goods.

<b>Public Good</b>	<b>Common Good</b>
Correction	Objective
Market Failure	Market Shaping
Outcome-Oriented	Outcome- <b>and</b> Process-Oriented
Governmental Action	Collective Interaction
Top-Down	Bottom-Up

Table 1. Public versus common good



## 2.2 The common good

For conceptual clarity, the common good (note the singular, not the plural) is different from ‘common goods’, ‘the commons’ or ‘common-pool resources’. The commons are rivalrous, but non-excludable, like fisheries and forests. They are rivalrous because the benefits are not without limit: there are only so many fish in the sea. For such resources, governance is critical. Rather than being left as open access, those successful commons were governed by clearly defined communities with collectively agreed rules and punitive sanctions for those who broke them (Ostrom 1990). Ostrom gathered a set of case studies of how communities around the world successfully collaborated to govern common-pool resources. In Nepal, where rice farmers face the challenge of ensuring that every farmer has sufficient water for irrigation, Ostrom and her colleagues compared irrigation schemes constructed and operated by the state with ones that were built and run by the farmers themselves (Ostrom and Gardner 1993). They found that the community- and farmer-led irrigation systems were in better repair, produced more rice and distributed the available water more fairly among all their members. This system worked because the farmers developed their own rules for water use, met regularly in meetings and in the fields, set up a monitoring system and sanctioned those who broke rules.

The common good is different. It is not restricted to excludable and rivalrous goods, but it also moves beyond the individual to the collective in terms of both outcome and process. The key difference is that unlike the public good, the common good is an objective to reach together, not a correction (with one party filling the gap left by the other). Furthermore, the emphasis is on the collective action that must be nurtured to achieve the result. Therefore, the process is almost as important as the final result — like that of a concert. This means that there is more emphasis than in the commons on the *how* than the *what*. The *how* includes how knowledge is shared along the way, which emphasises the ways in which collective action and coordination occur, so that the very features of that coordination matter.<sup>3</sup>

Returning to the development of vaccines during COVID as an example, had countries governed the process along common good principles, then the goal would have been vaccinating the world. This goal would have ensured that justice and equity were designed into the investment, innovation and collaboration required for the vaccines, leading to knowledge-sharing and access rather than vaccine apartheid. Indeed, if the process by which vaccines are produced does not foster knowledge-sharing between the different parties, then the ultimate outcome will suffer in terms of the learning required for each part of the world to produce the vaccines, not just be dependent on philanthropy by others. Thus, the emphasis on transparency, sharing, inclusion and participation becomes more important (Deneulin and Townsend 2007). Contrary to public goods and private goods, the production and distribution of which are left to governments and businesses respectively, common goods are the product of collective interactions and investment that require shared ownership and governance models (Deneulin and Townsend 2007). As such, they are neither the products of government, business nor the public, instead requiring the collaboration of all actors — with negotiation on production and distribution being central.

---

<sup>3</sup> Extensive discussion on the philosophical and economic approach to the public vis-a-vis common good is available in Dolderer et al. (2020), Murphy and Parkey (2016), and Deneulin and Townsend (2007).

The key differences also lie in the principles the different types of goods embed in the economy: the common good is a shared objective and therefore can mobilise, coordinate and evaluate economic activities around that objective. Therefore, the objective for economic activity around common goods is to satisfy basic needs and a dignified life (Hollenbach 2002, p. 81), more so than maximising a certain group's interest or the potential for commercialisation. Common goods are often characterised by sociability (formed through quality and mutual interactions) and a strong orientation towards society's good, defined broadly in the realm of quality life and wellbeing. In other words, there is a powerful orientation towards, and guidance by, the collective around collaboration, coordination and co-investment.

The focus on processes not only outcomes in the common good approach is similar to the human rights approach. Human rights standards and principles must include participation, equality, non-discrimination and accountability. These standards and principles must be used across all stages of decision-making, including assessment and analysis, priority setting, programme planning and design, implementation, monitoring and evaluation. The latter are especially key for making sure that participation and inclusion are taken seriously. These are critical to 'ownership' so that the design of policies is informed by people who are most affected by them. For participation to genuinely happen, information must be shared and transparency at all stages of decision-making must exist (WHO and UN OHCHR 2022).

The SDGs, for example, can benefit from a common good perspective, because their legitimacy requires negotiation of the objective. Different voices must be brought to the table to discuss what it means to achieve a direction of growth that is more inclusive, equitable, just and sustainable. Justice according to whom? Answers must include voices from the most marginalised, whether it is indigenous communities, women or people of colour who have been left out of the process of deciding 'what is to be done'. Common goods also put more emphasis on how to achieve them, meaning that we must design collaboration into the process and make sure that the ultimate result produces equity, justice, inclusion and sustainability (Deneulin and Townsend 2007). Water is surely a common good, but the how must take many voices into account, including the indigenous communities that have always honoured water as a shared resource. The fact that the world is interconnected also brings more attention to the collaboration, coordination and collective action. Cutting down the rain forests in the Brazilian Amazon will affect rainfall in Peru.

A mission-oriented approach to industrial and innovation policy (Mazzucato 2018, 2022) is crucial for the common good approach, because it focusses on a clear target that is set by either a government, an agency or an international body, and then requires intense public and private (and other) collaboration. Critical to this process is experimentation, and trial and error, creating a tense dynamic between a clear direction while also having bottom up experimentation.

These considerations help us think about what common good objectives mean for:

- **Policy design** — policies that are designed as outcomes- and mission-oriented can benefit from a common good approach, such as an industrial strategy that is not sector-focussed, but rather objective-focussed, with collaboration between sectors at the centre (like the moonshot, but related to social goals).

- **Institutional design** — conditionalities can be built into the relationships between public and private (such as those from a public bank or innovation agency).
- **Reward sharing** — financial tools can help share the rewards of collectively created wealth (such as those from community/public wealth funds).
- **Co-creation and democratic participation** — community engagement and stakeholder relationships play a central role — listening with empathy must be incorporated into this process.

All of those require capabilities that are often lacking across different actors, including public institutions where civil servants have been convinced that at best they can fix market failures (Kattel and Mazzucato 2018). The need for market shaping is clear with common goods.

### 3. From market fixing to market shaping: a mission-oriented approach

To tackle climate change we must orient policy and action around new collective principles and embed them in the design of the associated collaboration, investment and innovation. Indeed, if the economy is an outcome of how the public and private sectors interact, then attention around achieving goals must be given to precisely the types of investments, governance decisions and structures of interactions. A common good approach which focusses on collective action benefits from a market-shaping approach through which the government does not only fix market failures, but actively co-creates markets (Mazzucato and Ryan-Collins 2022).

A mission-oriented approach to market shaping begins by asking the question ‘What is the problem we want to solve?’ — framed as a goal to be achieved through investments in sectors and collaborations within individual projects. Missions are not new. They have been used to inspire and direct action throughout history (Mazzucato 2021). A generation of missions in the 1960s were technological, such as NASA’s Apollo mission of putting a man on the moon by the end of the decade. However, the missions we need today are different from NASA’s missions in the 1960s: they are not just technological, but social and political in nature. Today’s wicked problems are difficult to tackle precisely, because they are deeply interconnected and complex. Quentin Grafton (2017) defines a complex problem as ‘an undesirable outcome that arises from the multiple interactions of the components of a complex system that requires an understanding of the interactions and feedbacks of the system to ensure proper diagnosis and effective and adaptive policy responses.’ Modern missions cannot follow the same top-down, technology-driven methodology pursued by NASA (Mazzucato 2018a). Fundamental to delivering a successful modern mission is setting a clear direction, with targeted, measurable and time-bound goals amenable to reflexive evaluation and continual improvement through experimental trial-and-error, with a particular focus on citizen participation, bottom-up experimentation and cross-sectoral governance (Mazzucato and Dibb 2019).

Missions are a policy framework that can shape economic policy in an outcomes-oriented way in the service of the common good. For example, the Apollo mission had the clear objective of going to the moon and back in one generation (Mazzucato 2017). The European Commission’s Clean Oceans Mission (Miedzinski et al. 2019) aims to reduce plastics entering the marine environment by 90% and to collect over 50% of the plastic already present in our oceans, seas and coastal areas by 2025. Mission-oriented policies are systematic attempts to steer innovation and knowledge towards

attaining specific goals (Mazzucato 2018a; 2018b). Guided by a common good approach, missions are useful for delivering solutions to challenges that require tremendous coordination and finance spread across many years.

Missions are a useful framework to capture what needs to be done *across* multiple sectors and by multiple actors to achieve a particular goal. They can organise production, distribution and consumption patterns across various sectors towards socially desirable goals. This is different from a narrow, sector-based industrial policy, as it focuses on concrete problems that require system-wide transformation. The German *Energiewende* is a successful demonstration of cross-sectoral missions in practice (Mazzucato 2022). Translating as ‘energy transformation’, *Energiewende* sets out to tackle the climate crisis by reducing carbon emissions and moving away from nuclear energy. It has economy-wide implications, because it does not only involve the renewable energy sector, but it also aims to reduce carbon emissions in other sectors, such as steel production. Importantly, 90% of German citizens supported the energy transition, legitimising the mission.

Accordingly, missions should not be confused with top-down decision-making processes in which governments enforce an objective through regulation and then wait for the effects to appear. Instead, a mission-oriented approach provides an interface between innovators, the public sector and the whole of society, by ‘rethinking intellectual property regimes and R&D investments to catalyse the distributed intelligence of the private sector and individual citizens’ (Mazzucato and Kattel 2020). Governments need to allow for bottom-up experimentation and learning. Missions offer an opportunity to involve citizens, creating civic excitement about the power of collective innovation. They present an appropriate framework to put citizen participation at the heart of government action and connect broader policy measures to issues that matter to people. To avoid the capture of policy objectives by vested interests, policymakers should work closely with citizens and their institutional associations. Doing so will enable the involved decision-makers to see challenges from multiple perspectives (Mazzucato 2021).

Missions are directly related to the concept of public value — value that is created collectively and should be shared equally (Mazzucato 2018b). Public value is created by public sector actors creating and co-shaping markets in line with public purpose (Mazzucato and Ryan-Collins 2022). Rather than seeing public value as something that occurs when the public sector corrects market failures, public value creation requires a proactive public sector to set a direction, and actors in the economy to collaborate and innovate to solve societal problems. Market shaping adopts a positive rather than negative framing of governmental action. The public value concept is useful because it sees citizens and other stakeholders as co-producers of value, thereby emphasising their engagement and contribution in the policy process.

#### **4. Collective intelligence: shaping markets towards the common good**

The key contribution of the common good concept, together with a market-shaping approach, is that it foregrounds collective intelligence as an essential component of the ways in which capabilities, tools, institutions and partnerships are developed. Collective intelligence, as a group’s combined capabilities, is a central prerequisite for collective action. Common goods do not simply exist — they require appropriate legal, policy and institutional frameworks for governance within and outside the commercial realm, promoting R&D and production capacities, tailored towards equitable access for

all. As such, this section discusses the necessary conditions for governments to work towards common objectives by shaping and directing the investment, innovation and collaboration.

First, governments need to invest in dynamic capabilities to ambitiously transform policy design through experimentation and learning. Second, governments need to identify the adequate tools to implement mission-orientated policies, such as outcomes-oriented budgeting and procurement. Third, institutions need to be transformed in a way that aligns with the chosen missions. Public banks, for example, can play a crucial role in catalysing the kind of long-term finance the private sector is often too risk-averse to provide.

#### **4.1 Public sector capabilities**

Dynamic capabilities help further develop resources needed to develop, implement and evaluate missions properly. Unlike static operational capabilities, which are part of an existing resource base, dynamic capabilities are competences that help institutions shape their short-term competitive position towards long-term competitive advantage. There are three levels of dynamic capabilities that are particularly essential: state capabilities to set ambitious goals and obtain consent; policy capabilities to coordinate and create impact; and administrative capabilities to ensure long-term vision and secure organisational support (Kattel and Mazzucato 2018). This includes promoting knowledge creation, learning and creativity inside the civil service to counteract the increasing tendency of outsourcing the delivery of core services to the private sector (Collington and Mazzucato 2022; Mazzucato and Collington 2023). Public administrations must have the autonomy to take direct initiative, thereby moving beyond simply incentivising the behaviour of citizens and firms. Governments need to develop new capacity to strategically coordinate public sector employees within and across existing public organisations.

#### **4.2 Tools**

Governments can transform or expand their current policy toolbox to use instruments that align with a mission-oriented and common good approach. There are three tools in particular that enable governments to shape markets in a mission-oriented way.

**Outcomes-oriented budgeting** is an instrumental approach to achieve more accountable and effective public policies. Defined as allocating scarce financial resources to achieve priority outcomes, when the connection between budgets and expected outputs or performance is put at the centre of all government policy, it improves public financial management and maximises the budgetary space (Barroy and Gupta 2020). With a common good approach, the budgeting process would not only be designed in an outcomes-oriented way, it would also embed new metrics into the design of budgets with a view to directing finance towards inclusive and sustainable outcomes.

**Mission-oriented procurement** is another way to channel budgets into defined objectives. Public procurement refers to the process by which public organisations place an order for goods, services and works required to fulfil their needs (Mazzucato 2020). Governments have buying power through their procurement budgets and cross-departmental procurement should become part of the mission-oriented process (MOIIS 2019). The state's purchasing power can direct procurement processes towards precise missions and foster new partnerships. Doing so effectively requires an intervention

at the contractual level, ensuring the common good is built into the framework of a mission. Countries around the world are using procurement as a tool to advance public policies and objectives, including in health and climate. Procurement can be assessed against the Sustainable Development Goals (SDGs) to determine whether an investment is viable from a common good point of view.

**Dynamic evaluation** can help public sector institutions make policy decisions by offering new ways of measuring, monitoring and evaluating policies, so that they also capture broader economic impacts in a dynamic way. To capture these spillovers, governments need new dynamic evaluation methodologies, as well as new metrics around the common good. As countries take aim to tackle grand challenges, current ways of policy evaluation are not sufficient and need to be complemented by alternative approaches. These alternative approaches must think of value as co-created by all economic and social actors and markets, as the result of investment by public and private actors (Mazzucato et al. 2020b). New methods of assessment that depart from static ‘before and after’ cost-benefit analysis, and instead incorporate the notion of public value as collectively created by a range of stakeholders, must be developed and used. Importantly, the dynamic evaluation should aim to promote not only accountability, but also the quality of the interactions of implementing agencies in achieving the common purpose.

### 4.3 Institutions

Dynamic capabilities and tools need to be accompanied by the right set of mission-oriented institutions — institutions that strategically direct long-term and patient finance, and create the necessary safe space for risk-taking and experimentation. State investment banks, including multilateral institutions, are often particularly well positioned for strategic coordination within an investment ecosystem through engagement with various stakeholders and financial (and non-financial) market participants. They can perform this function by providing the necessary means to prioritised economic sectors and economic activities that the private financial sector is often unable or unwilling to provide (Macfarlane and Mazzucato 2018). The European Investment Bank (EIB), for example, has been one of the main providers of long-term finance, as well as risk-sharing, and has been taking the lead in key policy areas, such as climate action finance (by committing to dedicating 50% of financing to climate action by 2030) and finance for innovators (Mazzucato and Mikheeva 2017).

Finance and funding are not neutral. The structure of finance is as important as the quantity of finance — both are key to the successful implementation of market-shaping and mission-oriented policy. The type of finance available can affect both where investments are made and the type of activity that is funded (O’Sullivan M. 2006; Mazzucato 2013). The forms of financial institutions and markets that exist have a material impact on activity in the real economy. This makes it necessary to rethink the institutional financial ecosystem to foster a greater emphasis on the provision of long-term, patient finance and investment (Mazzucato and Macfarlane 2017, 2019). The structure of finance should be shaped using conditionalities with a view to achieving desirable outcomes, including increasing access to water or redirecting private finance towards improving water services and infrastructure.

#### 4.4. Public-private partnerships: a new social contract

A market-shaping approach to the common good must change how the public and private sectors work together; there needs to be a move towards a mutualistic relationship characterised by shared goals geared towards a common goal. The partnership between the state and business is less about handouts, guarantees and assistance, and more about prioritising stakeholder value and co-investing in the real economy. The private sector needs to work *with* the public sector to achieve society's goals: not through corporate social responsibility or charity, but through going to the very core of business models and value chains. This new form of public-private partnership should replace the rent-seeking and value-extractive behaviour that has dominated many economies.

To give an example, the Oxford-AstraZeneca COVID-19 vaccine, developed with the help of government investments in R&D, manufacturing and advance sales, included provisions to keep prices low, limit profits during the COVID pandemic and ensure knowledge-sharing for public health. This contrasts with the trend of monopoly pricing in the pharmaceutical industry and strategic patenting to block competitors. During the pandemic, actions taken by the government and the company were clearly conditioned to benefit public health. Accordingly, reconceptualising public-private partnerships is about moving from a model of redistribution to one of predistribution, where the risks and rewards of innovation and change are shared equitably. There are some different ways this can be done:

**Equity stakes:** A portion of the value that is created by all actors can go back to public wealth funds, rather than just to the private sector. This is a direct way to recognise that often the highest risk, early stage of investment in innovation is borne by the taxpayer — hence equity stakes can be used to socialise both risks and rewards. Such funds can then be used to reinvest the value created back into local communities or to produce citizen dividends/shares. This can happen via public banks or more local wealth funds, as is being experimented with, for example, in various cities and states in the United States. COVID-19 has also brought to light the possible use of equity stakes by converting government loans (such as the UK's Future Fund) to shore up the supply shock experienced, especially by small- and medium-sized enterprises, and to protect the enterprising fabric of the society.

**Diffusing knowledge:** Intellectual property (IP) rights can also inhibit the diffusion of critical knowledge, technology and infrastructure. This became blatantly evident in the COVID-19 pandemic, during which big pharmaceutical companies failed to share IP-protected information that could have drastically scaled up the production of vaccines. Exploring opportunities around pools, pledges or licensing could enhance the propensity for knowledge-sharing.

**Intellectual property governance:** Fostering collective intelligence means being very clear on the structure of property rights. IP protection is not a right, but the result of a contract whereby the government grants monopoly power in exchange for transparency and diffusion of knowledge. If the contracts are designed to be too up-stream, wide and strong, IP rights can inhibit the diffusion of critical knowledge, technology and infrastructure (Mazzoleni and Nelson 1998). This became blatantly evident during the COVID-19 pandemic, during which big pharmaceutical companies failed to share IP-protected information that could have drastically scaled up the production of vaccines. The state must therefore establish a new legal blueprint for patents and other IP that better balances private

incentives, and public value and interest. Exploring opportunities around pools, pledges or licensing could enhance the propensity for knowledge-sharing. To create more symbiotic partnerships, governments can redesign the very contracts on which the relationships between public and private sector actors are built.

**Conditionalities:** When companies benefit from public investments in the form of subsidies, guarantees, loans, bailouts or procurement conditions can be attached to help shape innovation so that it achieves the greatest public benefit (Mazzucato 2022). For example, procurement can be conditional on greener supply chains, reinvestment of profits and better working conditions. Accordingly, socially desirable conditions can function as the ‘strings’ attached to the use of public funds to ensure a more concrete social return on investment. Returning to the previous vaccine example, comparing the Oxford-AstraZeneca with the Pfizer-BioNTech COVID-19 vaccines exemplifies how the ways in which public-private relationships are governed matters. Both partnerships received considerable public funding, BioNTech receiving \$445 million and Oxford-AstraZeneca collecting \$1.3 billion (Mazzucato et al. 2020c). However, while Oxford-AstraZeneca’s production of the vaccine was made conditional on storage at regular temperatures and lower prices, thereby increasing accessibility, Pfizer-BioNTech built in market discriminating features, such as storage at -70 degrees Celsius and higher prices. The case shows that governments can build conditions into contracts that maximise public value and regulate private profit, thereby designing common good principles into the terms of the relationship.

## **5. The application of the common good, market shaping and missions to health**

Health is one area where countries need to adopt a radically different approach to the governance of innovation and transformation; one that gears the shaping of markets towards the common good. Applying this orientation to the example of health technologies would mean that the state, businesses and communities organise and agree on the rules and obligations around ownership and sharing of knowledge towards developing health technologies for the collective benefit of global health (WHO 2021a).

In health economics, health is often conceptualised as a private good. This understanding implies that health is a non-rivalrous, but exclusive, good. Even though one person’s health does not affect another person’s capacity to be healthy, there are mechanisms that can exclude populations from health, such as limited availability of drugs and vaccinations. However, health can also be characterised as a public good. Unlike the private vision, this paradigm considers it difficult to exclude a population from good or bad health. If someone decides to get vaccinated, there’s little someone else can do to prevent that. Nevertheless, even within the public good vision of health, some elements of private goods coexist, such as private access to health care, including medicines and medical devices.

Some authors propose expanding the traditional public good vision, limited to local and national jurisdictions, into a global context (for example, Smith et al. 2004). The global public good vision of health argues that people can be affected by the health of other populations, regardless of where they are located. They cannot be excluded from the global benefits and negative consequences of health. For example, global herd immunity for communicable diseases can create a shield protecting those who are not vaccinated. The good health of one person is shared globally, making it non-exclusive and



non-rivalrous on a global level (Illingworth 2017). The G20 High-Level Independent Panel championed the vision of a global public good in the context of the COVID-19 pandemic (G20 High-Level Independent Panel 2021).

The public goods concept of health, however, has several limitations. First, it only focuses on one type of market failure. From a neoclassical perspective, health is affected by other market failures, such as externalities and asymmetric information. In the best case, the public vision of health is incomplete (Horne 2019). Second, and more importantly, the public goods account of public health is narrow. For instance, public goods such as vaccinations and toxin-free water are health-related goods that help reduce the spread of infectious diseases (Anomaly 2021). Yet, people can be easily excluded from accessing safe, toxin-free water. Therefore, it is excludable and technically not a public good (Dees 2018).

Dees (2018) argues that even though we accept the public good account of health, it should be extended to a normative dimension. This means that while health should be easily accessible to all, it must also be available in a way that is beneficial to society. The public good vision of health care recognises that government intervention is crucial in ensuring that public goods are available. The more beneficiaries and non-contributors there are, the greater the importance of government intervention (Anomaly 2011). However, the public good vision fails to recognise the interdependence between government and private sectors in key areas like innovation, and the need for a whole-of-government approach to harness these efforts. A common good perspective can help better understand health's true nature.

Ensuring access to quality health care is a shared responsibility of governments, international organizations and civil society. Governments primarily provide and regulate health care services, and invest in public health and disease prevention. International organisations, such as the World Health Organization, play a crucial role in coordinating global efforts to address health challenges and share knowledge and expertise. Civil society organisations, such as NGOs and community-based groups, also have an essential role in advocating for the right to health, increasing transparency and accountability, and supporting efforts to improve health care access and quality. Diseases and health conditions do not respect national borders. For example, the spread of infectious diseases has highlighted the interconnectedness of our world and the importance of international coordination in achieving the goal of 'health for all'. The COVID-19 pandemic has shown the need for a shift in perspective towards understanding health as a common good.

The COVID-19 pandemic demonstrated the potential for a health emergency to have widespread impacts on society and the economy, caused by a combination of demand and supply shocks, such as mobility restrictions and global supply chain disruptions. This was the first time a health emergency had such far-reaching effects, as disasters typically have more local or regional impacts. For example, if there had been excess demand for personal protective equipment during the Ebola virus epidemic in West Africa in 2014-2015, the rest of the world would have been able to meet this demand without significantly impacting other markets in other sectors and countries.

However, in the case of the COVID-19 pandemic, when global demand for respirators exceeded supply, it was impossible to meet this demand due to mobility restrictions that reduced global supply

and because all markets were simultaneously demanding the same product, resulting in shortages, price imbalances and supply chain disruptions. The wide-ranging impacts of the COVID-19 pandemic call for increased coordination within and among countries, beyond the market-fixing approach, and require the recognition of health as a common good and a shared responsibility, as the effects of a health crisis affect the entire world.

There are three necessary changes for health to be considered a common good.

### **5.1 Common good-oriented partnerships**

The public and private sectors play complementary roles in the provision of health services. The public sector often provides essential services, such as vaccination programmes and disease control, that benefit society as a whole. The private sector, on the other hand, often provides specialised services, such as advanced medical treatments and pharmaceuticals, which are accessible to those who can afford them. However, this vision is limited and fails to acknowledge the collective interactions between the government and private sector. We should rethink the role of the state and its relationship with the private sector in health in accordance with the previously outlined social contract.

Public-private partnerships should follow three key principles. First, tackling public health needs requires a collaborative environment where actors work together in new, dynamic ways and share knowledge to accelerate innovation. Second, it is essential that affordability and access are explicit objectives within the innovation process. Considerations of equitable access on a global scale should be incorporated into every phase of health innovation, from discovery onwards (Torreele forthcoming). Finally, it is important to identify forms of finance that are patient, meaning they can provide reliable funding to sustain the long and uncertain innovation process.

Shaping markets towards the common good can help ensure that essential health services are available to all members of society, regardless of their ability to pay. New forms of public-private partnerships have the potential to optimise the use of resources and improve the effectiveness of health services. They can also foster innovation and ensure that the benefits.

### **5.2 A new global financial architecture for health**

Investing in health care and public health is essential for the wellbeing of societies and the world. However, global health financing has proven to be a challenging task. For instance, the World Bank and the World Health Organization estimate that preventing another crisis like COVID-19 can be achieved with an investment of just \$1.30 per person in pandemic preparedness and response (PPR). Despite this, the international community's Pandemic Fund, which was established to help close the \$10.5 billion annual PPR financing gap, has only generated around \$1.5 billion in funding. Similarly, the IMF's Resilience and Sustainability Trust (RST) was created to help low- and middle-income countries (LMICs) finance urgent health and climate needs, but the funds come with the usual conditionalities that could ultimately weaken the health systems they are intended to strengthen (Mazzucato and Donnelly 2022).

These examples highlight a broader issue: despite the COVID-19 pandemic, the most significant health emergency faced by modern society in the last 100 years, global health is not receiving adequate financing. It is crucial to recognise the urgent need for health financing and to redirect all forms of finance towards the goal of achieving 'health for all'. This reiterated the necessity of a new social contract that values creation over profit, and raises awareness of rewards and risks (WHO Council on the Economics of Health for All 2022a).

A new global architecture for global health finance is necessary, based on principles of inclusivity, sustainability, accountability and complementarity. This new architecture must promote collective intelligence and ensure that health innovation provides life-saving solutions, moving away from the outdated 'donor-beneficiary' mindset and viewing health as a long-term global investment in common goods, rather than as a charitable development project (WHO Council on the Economics of Health for All 2022b). Financing regional and global capabilities to deliver on ambitious health missions, including investment into clinical trials and manufacturing, is critical to ensure global health (Torreele forthcoming).

### **5.3 New legal blueprint for intellectual property**

The state must create a new legal framework for intellectual property (IP) that better balances private incentives and public value and interests. Innovation must be governed for the common good (WHO Council on the Economics of Health for All 2022c). Health innovation and technology should be outcomes-oriented, replacing market-driven research with a needs-based paradigm (Torreele forthcoming). The COVID-19 pandemic has once again highlighted the need to address major flaws in the current governance of health innovation, which have created major obstacles to ensuring equity and access to diagnostics, treatments and vaccines for all, particularly in LMICs.

The rapid development of highly effective vaccines less than 12 months after the pandemic was declared is a great achievement of science. However, this success was not due to chance and was made possible by decades of investment by public agencies in technology, which was adapted to the genetic structure of SAR-CoV-2 when the need arose. Despite this public financing, there are still significant financing and access problems. For example, although WHO has promoted the COVAX mechanism, it only raised 9.5% of its funding goal for the 2021-22 financial year, leading to significant gaps in vaccination rates globally.

Governments' responses to this situation have largely relied on an ex-post approach of trying to fix preventable 'market failures' after they occurred. Examples of this during the current pandemic include negotiating subsidised vaccine pricing agreements, attempting to secure IP waivers and helping African countries recreate mRNA COVID-19 vaccines based on publicly funded technology. This ex-post approach is not only ineffective and inefficient, but also has serious human consequences that can be prevented with a more proactive and intentional 'upstream' approach to governing health innovation.

Governments and institutions must be able to dynamically adapt to the evolving needs of health crises. The consideration of health as a crucial area of government action has further highlighted the need

for dynamic capabilities, mission-oriented tools, institutions and a new social contract to successfully establish 'health for all.

## **6. The application of the common good, market shaping and missions to water**

In the age of the Anthropocene — the geological epoch during which human activity is having a significant impact on the planet's climate and ecosystems — humans are impacting the source of freshwater, influencing both domestic, industry and irrigation water flows (blue water), as well as precipitation and rainfall (green water). New research shows that geographical regions are hydrologically intertwined by blue water flows (groundwater) and green water flows (atmospheric water), meaning that water use in one part of the world has implications on water use in another part of the world. For example, as already noted, cutting down the rain forests in the Brazilian Amazon will affect rainfall in Peru (Rockström 2023). As well as human societies being regionally interdependent around water use, the global water cycle is also deeply interconnected with other planetary boundaries, including land system change and climate change, and it is a powerful determinant of our access to food, energy and other resources on which humans depend. In other words, water runs through all the Sustainable Development Goals (SDGs), and to solve humanity's biggest challenges around poverty, hunger or health means seeing the water crisis as a truly interconnected and collective problem. As a collective problem, the global water crisis requires immense collective action and collective intelligence to solve. As human societies become more and more deeply interconnected with the global water cycle, how we value, govern and consume water must change: it is time to see the global water cycle as a global common good.

Our current economics of water is unable to capture a comprehensive value of water, nor does it help us govern water challenges in an action-oriented way. Current frameworks and models focus on a scant 10% of the hydrological cycle (irrigation, dams and other anthropogenically influenced blue water flows) and leave out 60% altogether by not including green water in their assessments (Rockström et al. 2014). Green and blue water cycles are seen as the 'bloodstream' of the biosphere (*ibid.*) and should be measured and valued in relation to each other. Deforestation, land degradation, infrastructure development, energy and food production all impact on green and blue water cycles, and ultimately on the stability of ecosystems and — in consequence — on human development.

A new economics of water is needed; one that brings together the conceptual lens of a mission-orientation and a common good. As discussed, while public goods are often framed in terms of correcting the lack of private investment in 'goods' (positive externalities) or the production of 'bads' (negative externalities), the global common good is not about *corrections*, but about how to frame the *objectives* and deliver on the design of the collaboration between all value creating actors to get there. The common good approach allows us to think about tackling water challenges with more purpose and ambition, designed to deliver collective intelligence and access, as well as designing the interface for collaboration — designing this in a pre-distributive way to get the relationships right between public and private actors, and between capital and labour. This requires outcomes-oriented conditions, tools and governance mechanisms so as not to have to pick up the pieces — fixing markets — later. This means putting more emphasis on the structure of finance (not only its quantity), the design of institutions (not only their existence), and the concrete characteristics of the relationship between public and private actors (not only their partnership). Given that local, regional and national

governments are tasked with managing the complexity of water-related challenges, this new economics of water can empower bold action, embedding collective principles at the heart of water policy. Ultimately, defining water as a common good can help reframe the way in which we think of policy objectives, co-investment and co-design with collective intelligence at the centre.

### **6.1 Water as a global common good**

Water can take on different economic forms and properties throughout the water cycle: it can be a public good (e.g. water sanitation), a private good (e.g. bottled water), a common-pool resource (e.g. water in an aquifer) or a club good (e.g. community-based irrigation scheme). Each of these economic definitions has implications for how water is governed. The common good approach is therefore not a negation of any of these economic definitions, but rather intends to build on them and strengthen the governance of water in varying situations. However, considering that in many cases water is governed at a national level and therefore understood as a public good, it makes sense to pause and consider the difference between a public good and common good approach to water governance. Indeed, clean water, useable for all drinking and sanitation reasons, is often perceived as a public good, both due its non-excludable and non-rivalrous properties, and also to cover for the under-investment by the private sector. In South Africa, for example, in areas which have faced serious risks of drought, the Department of Water and Sanitation has the mandate to regulate and govern reservoirs to ensure a stable water supply for its citizens (South Africa Government 2020). Even in England, which has a privatised water sector, 50 million households and non-household consumers receive water, sanitation and drainage services from companies with exclusive government contracts (Ofwat 2022). Yet this conventional approach to valuing and managing water as a public good is problematic for three reasons.

First, the public-good approach to water governance implies geographical and sovereign boundaries to policy responses. The term 'public' in public good economic theory is often used to refer to *local or national* government or state, thus, indirectly implying *geographical boundaries*. For a globally intertwined crisis such as climate change or the water crisis, a public-good approach would mean limiting our approaches to water management and responses at a local or country level. The dynamics and interests behind the driving forces of water-related problems (e.g. international trade, climate change) are often global and beyond national government control (Conca 2006). Hence, localised or single-country strategies will not suffice to address many water-related problems. The 'space' boundary would also leave limited accountability for other nations, despite their contribution to, and responsibility for, the transboundary of water crisis. Transboundary water pollution is a common example of such a collective action problem.

For Kaul (2016) the concept of the global public good accounts for these national restrictions in policy responses and represents an important contribution to the public good concept. As discussed earlier, Kaul (2016) offers relevant policy recommendations, including the creation of international laws that address the global nature of public goods, the promotion of a more global civil society and the empowerment of governments to act for the provision of global public goods. However, while the global public good concept does address this limitation, there are two additional challenges to consider.

For one, the two properties of public goods — something that only government provides and that is non-rivalrous in its consumption — are problematic in the context of water as it can potentially discourage private investment and lead to a ‘free-riding’ problem. For example, water as a non-rivalrous good would mean once water is ‘produced’ for a certain base consumer, it can be consumed by others at no additional cost. While flood control could be considered the closest to a public good for water, the provision of water, sanitation and hygiene (WASH) services, for example, is not: the high capital costs provide a barrier to supply augmentation when the pricing of water is insufficient to cover all costs. The potential low return and limited commercial incentives may explain low private sector contributions to the water sector. A survey shows 85% of water services in 330 major cities were publicly owned and publicly run (Global Water Intelligence 2011)<sup>4</sup> and private sector contribution to water investment has been historically low in many countries.<sup>5</sup> Responding to the water crisis would require long-term financing of capital-intensive projects and innovations that open up opportunities for private-public partnerships. Considering water as a public good may lead to an unsustainable mechanism in the water economy, where the financial risk and burden of its provision are held by governments and not shared equitably.

Furthermore, and most importantly, the public good approach does not inherently align with the much-needed collective action to respond to the water crisis, whether national or global. In neoclassical theory, provisioning public goods is traditionally seen as the responsibility of local, regional or national governments, because they do not incentivise private investment and activity — in other words, a market failure. Not only does this centralise water governance within a single actor — the state — it also limits government intervention to filling gaps that the private sector is not filling. The scale of the water crisis is such that governments cannot wait for markets to fail to step in: they must have the mandate to work with other economic actors to proactively invest in and shape solutions for water-related challenges. Indeed, responding to the water crisis and securing the future of water for all should be considered as a collective responsibility. Defining water as a public good risks weakening this collective responsibility.

Attempts to frame water as a complex common good are not new. For example, ‘the concept of Integrated Water Resource Management (IWRM) was established, back in the 1930s, to address “optimal” water management, mainly from a technical perspective, but also considering social goals, such as the fulfilment of basic needs and the total welfare of the population’ (Meran et al. 2021b). Later, in 1957, the United Nations (UN) placed a global label on water issues, talking about the need for an integrated approach for irrigated agriculture globally. However, UN missed out the bigger picture, and the systemic relevance of water and its subsystems for the general wellbeing and social development. This global but limited perspective was partly corrected later, in 1977, at the Water Conference in Mar del Plata, where the need for global coordination within the water sector was explicitly addressed, but without a substantial focus on high water demand and its negative environmental impacts (Snellen and Schrevel 2004).

---

<sup>4</sup> Global Water Intelligence 2011.

<sup>5</sup> For example, private sector investment through public-private partnerships in the water sector between 2000 and 2014 accounted for less than 1% of the total investment in the water, telecommunication, energy and transport sectors (Kolker et al. 2016).

Therefore, considering the different economic forms of water — as a public good, global public good, private good, common-pool resource and club good — is necessary, but not sufficient to redefine the economics of water. The concept of the common good places particular focus on the collective action required to tackle challenges. Indeed, if water has become a global common good in today's interconnected and interdependent world, then the economics and governance of water can benefit from the common good approach as it emphasises the objectives around which economic resources and investment can be collectively mobilised, directed and coordinated. A policy framework that can help to govern water along a common good-based approach is mission-oriented policy.

## 6.2 From Sustainable Development Goals to water missions

A market-shaping approach to governing water as a global common good in response to the water crisis provides direction to, and concrete actions in, achieving a shared purpose. Missions could help address the complexity of water challenges at multiple levels and in a cross-sectoral way, by leveraging participation and collective intelligence to stimulate new forms of bottom-up innovation around water. The Sustainable Development Goals (SDGs) offer an important starting point in identifying the most important water-related challenges, as water flows through all SDGs. These SDG-related challenges can then be turned into concrete, ambitious, and clearly defined missions that require investment from multiple sectors, collaboration between multiple actors (private, public, third sector and civil society) and the mobilisation of a whole host of bottom-up solutions. There is no one mission to solve the many global water challenges: instead, each city, region, or nation can define its own set of water-related missions to help govern water in a more outcomes-oriented and cross-sectoral way.

Water missions require a clear roadmap for achieving the stated goal. See Figure 2 for an example of a water mission related to SDG 6 ('Ensure access to clean water and sanitation for all').

- The **clear targeted mission** is expressed by SDG 6 (clean water and sanitation). However, considering the complexity of water challenges, water missions target all other SDGs as well, which most obviously include, but are not exclusive to, SDG 2 (zero hunger), SDG 3 (good health and wellbeing) and SDG 10 (reduced inequality).
- **Sectors** for cross-sectoral innovation must be identified as part of the framework. Similar sectors, as in the case of the Clean Oceans Mission: chemical industry (heavy usage of water and generates lower-quality water, but also offers an opportunity to develop new solutions for treating water); energy industry (nuclear and fossil fuel energy plants, for example, consume and waste an enormous amount of water); agriculture (reduce reliance on rain-fed agriculture by reducing the impact of irrigation where it isn't actually needed and helping irrigation in the parts of the world where it is most needed, or developing new breeds of plants resilient to drought and water intermittence); education (change the water use behaviours in developed countries); and AI technology (better water management systems and increased analysis capacity on the economic value of water). All initiatives must be aligned behind the overarching goal of achieving SDG 6. That can only be done through a new way of valuing water and aligning our core structural and institutional processes behind the perception of water as a global common good, where sustainability and equity are critical.

- **A portfolio of projects and bottom-up experimentation** to find alternatives to today’s most harmful processes, involving both blue and green water. The focus should extend beyond finding alternatives for reducing the usage of water and distributing access to clean water more equally, and should consider reducing the impact on ecosystems of human activity and restoring the human-indicted degradation of the environment where possible.

## Mission-Oriented Innovation and Industrial Strategy



Figure 2. Mission-oriented innovation and industrial strategy

CSIRO, Australia’s national science agency, has adopted a mission-oriented approach to drought resilience, which offers a helpful example of how to govern water challenges in a more cross-sectoral way. In 2020, CSIRO launched a new missions programme with the aim of building long-term environmental, social and economic resilience, and strengthening Australia’s COVID-19 recovery. Considering the perennial weather extremes that the country faces, CSIRO decided to focus one of its 12 mission areas on drought resilience with an explicit goal of ‘reducing the economic impacts of drought by 30 per cent this decade.’ Working with the Department of Agriculture, Fisheries and Forestry, the Bureau of Meteorology and several other ministries, CSIRO is mobilising bottom-up farm innovations (around improved decisions based on climate data for their location, new farming systems to improve water use efficiency and options to minimise risk) with a view to improving water security and achieving the clearly stated mission (UCL IIPP 2021). The case of CSIRO shows that a mission-oriented approach to water-related issues could help us deal with the complexity of water at multiple levels, and across different actors and sectors.



Embedding a common good approach into water missions can help steer policy to deliver more equitable outcomes. For example, a national mission aimed at providing fresh water and sanitation for all could bring the much-needed clarity back into local, regional and national cooperation networks and institutions, serving as a catalyst for further efforts to tackle what threatens us all. What is more, the common good approach allows us to design collective and justice-related principles into the investments, institutions and partnerships required to achieve these missions.

### **6.3 Designing the common good into investments, institutions and partnerships for water**

This subsection is about how to design principles of efficiency, equity and sustainability into the investments and innovations required to tackle water challenges. There is an opportunity to learn from cases such as the Turenscape Initiative, which has adopted a multi-disciplinary approach to help design ecological cities and spaces across China (Landscape Architecture Built 2020). One of the projects is the development of the Nanchang Fish Tail Park, the ecological infrastructure design of which represents an innovative solution to flood management in the Jinhua district. The park uses terraced river embankments to create water-resilient landscapes and inland inner ponds to direct the flow of river water through filtrated gravel layers, as well as several other design features that embed sustainability into the infrastructure. Developing the right capabilities, leveraging longer-term finance and designing a new social contract are important conditions to help governments, and other economic actors, spur and govern water innovations and investments in more inclusive and sustainable ways.

#### **6.3.1 Dynamic capabilities**

Designing more ambitious water policy and leveraging new types of tools requires that public, private and community-based institutions responsible for governing water have the right dynamic capabilities and capacities. Indeed, at a time when the impacts of the water crisis are becoming more pronounced, adaptive and resilient institutions are required to manage and conserve water resources, control water pollution and resolve water conflicts. In the case of governments, rather than outsourcing key activities to consultancies or other private sector actors, governments can invest in and build out their own capabilities. This is particularly relevant in the water sector, as a lack of capacity and capabilities is often perceived as one of the key challenges in responding to water scarcity, the provisioning of water quality and access, and water management in both high-income countries and developing economies (Water Policy Group 2021).<sup>6</sup>

One of these capabilities is the adoption of new forms of dynamic evaluation to measure the multiplicative effects and cross-sectoral spillovers of public investments. For example, Ofwat, the UK Government's water regulator, adopted a set of public value principles with a view to having English water companies 'demonstrate how they consider, and are adding, social and environmental value.' However, these principles are loosely defined, making it difficult to hold water companies to account. What is more, as a regulator, Ofwat has not been given the mandate to shape markets and instead fixes them when the market fails, for example in the form of fines as a result of negative externalities, such as sewage discharge. There are opportunities to embolden the mandate of public sector actors

---

<sup>6</sup> Based on a survey of 127 water leaders from 88 countries representing all regions globally, conducted by Water Policy Group (2021).

and strengthen their ability to measure their impact. The BBC, the UK's national broadcaster, has taken on this challenge, categorising public value into individual value, industry value and societal value, representing a step in the right direction to measure the multiplicative effects of public investment in cultural production (Mazzucato et al. 2020a).

### **6.3.2 Patient finance and scaling innovation**

A global common good approach entails governments leveraging patient, mission-oriented finance to design justice, public purpose, and the common good into policies. As water innovation is capital-intensive, the combination of public and private patient finance mechanisms is a crucial enabler. Despite the growing interest in water-related technology, investment in water innovation and crisis response is still insufficient. For example, it is estimated that an average capital investment of US\$114 billion/year is required through 2030 to meet the SDGs for water supply, sanitation, and hygiene (Hutton and Varughese 2016), which accounts for a threefold increase of the current spend. Given the public good trait, water-financing historically relies on public funding with minimum private sector contribution. In fact, the private sector contributed less than 5% of total investment in the water sector, much less compared to other sectors such as transport (63%) or energy (34%) (Kolker et al. 2016, p. 4). Governing water innovation based on a global common good principle would require a new financing paradigm, whereby investment becomes a collective effort and responsibility, with a greater need to mobilise both public and private financing.

Investment in water must also scale up from local and regional to national and global levels. While the resources needed to address the water crisis may differ across spaces, the cost of underinvestment in water innovation has global implications. For example, the annual, estimated costs of meeting SDG 6 in rural Sub-Saharan Africa is higher than any other region globally, reaching US\$5 billion annually in expenditures (Hutton and Varughese 2016, p. 14; Hope et al. 2020). Infrastructure and sanitation investments also need to reach US\$400–500 billion per year up to 2030, double the current water investment rate, and the total cumulative investment needed in water infrastructure by 2050 is estimated at close to US\$22.6 trillion (OECD 2018). Therefore, there is a need to direct water financing from high-income economies to emerging and developing countries with lagging access to commercial patient finance.

As well as shaping investment to become more patient and long term with a view to scaling innovation, this investment and innovation must be designed with new principles of efficiency, equity and sustainability. Learning from indigenous approaches to water governance can help. A relevant example of this is the work by Watson (2021) on 'Lo-TEK' design, which argues that embedding the principles of local indigenous communities into water solutions and technology can help shape the outcomes of water governance. Such technologies include the 'Qanat', an ancient water regulation method that uses ecologically conscious water infrastructure, which is currently being applied in the Middle East to increase water access. Another example is the case of the East Kolkata wetlands, whereby farmers protect and use the wetlands as a natural sewage and wastewater treatment site, which represents an alternative to massive dam projects as these damage local ecologies and biodiversity.

### 6.3.3 New social contract

Critical to tackling water-related challenges is a different relationship between business and the state — a dynamic, mutualistic relationship characterised by shared goals that maximise public value and the common good, prioritisation of stakeholder value on the part of willing businesses, and co-investment in technology, skills and infrastructure. This new form of public-private partnership should replace the rent-seeking and value-extractive behaviour that has dominated water sectors for years. In England, for example, since the privatisation of the water industry in 1989, an estimated £72 billion has been allowed to leak from the industry into dividends (Jenkins 2022). Last year, just nine CEOs of English water companies received £15 million in payouts, an increase of 27% on the previous year (*ibid.*). Meanwhile, the country's water industry is plagued with water leaks and sewage discharge due to outdated infrastructure. Governing these public-private arrangements in new ways is critical.

One example of doing this is governing intellectual property (IP) rights in new ways. The current practice of IP governance around water is not in line with the common good approach. In countries where water governance systems are in the public domain, the governments distribute the rights to use water through specific instruments. Such instruments often come with 'property' and/or 'quasi-property' rights attached, which may have an adverse impact on just distribution of water rights. Quasi-property rights in water governance — where states maintain the legal ownership of water, but rights to water use are leased over a longer term (such as through water use permits, alienate permits, legal protection, compensation and state protection) — are particularly prevalent in developing countries (Bosch and Gupta 2022a). Bosch et al. (2021) show 60 developing countries allocate 'property-like' rights to water bodies and agencies through water use permits, which have led to de facto privatisation of the water sectors. Despite the legal ownership of water remaining with the government, such instruments may impede government's ability to govern water along common good principles. This is because, as with many traditional property right instruments, if they are not designed with a common good objective then the instruments can result in rent-seeking and value extractive behaviour. Evidence shows that the contractual nature of quasi property rights to water would mean states losing their ability in managing water during the contracting period (Bosch and Gupta 2022b). By redesigning the very contracts of these public-private relationships around water governance, so that a shared objective and public value is baked in from the start, governments can reshape the way that water is governed.

## 7. Summary and conclusion: towards a new economics of water

Transformative change towards growth that is more inclusive and sustainable requires particular attention on how to drive collective collaboration — technological, social and regulatory — towards solving problems. Missions are concrete ways to tackle problems that require cross-sectoral and cross-actor interaction. This interaction between a wide range of actors, from the public, private, third sectors and civil society — how they work together to deliver collective intelligence and collective solutions requires not only a market-shaping approach, but also one that is directed at a common good. While the public good is framed as a correction for something that is missing, the common good is an objective to deliver together. It first presented a market-shaping, mission-oriented and common good approach, and then applied it to our challenges around water.

The common good approach is an opportunity to mobilise collective action around common objectives. Bringing together a market-shaping approach, which imbues governments and other actors with agency and ownership over tackling our biggest water challenges, a mission-oriented approach, which allows governments to invest and innovate with direction and purpose, the common good is an action-oriented framing. Considering the scale of the local, regional, national and global water crises, including water scarcity, drought, extreme weather events and polluted waters, they will require tremendous finance, innovation and collaboration spread over many years. What is more, these challenges impact a wide range of sectors, such as agriculture, livestock, food and energy. Missions not only offer a purpose-driven, directed approach, but also an opportunity to bring multiple sectors together around a common goal.

The common good approach also empowers governments and other economic actors to design collective intelligence into the investment, innovation and coordination required to meet common water-related objectives. By embedding collective action, outcomes-oriented principles and justice into the finance, capabilities, tools, institutions and partnerships required to govern water challenges, the common good strengthens the pre-distribution of capital, resources and ownership, as well as the redistribution. Importantly, the very partnerships that are developed must put the common good and public value at its core, redesigning the very metrics and contracts that guide public policy and business activity.

## Bibliography

Adams, R. D. and McCormick, K. (1987). Private Goods, Club Goods, and Public Goods as a Continuum. *Review of Social Economy*, 45(2), pp. 192-199. Doi: 10.1080/00346768700000025.

Anomaly, J. (2021). What is public health? Public goods, publicized goods, and the conversion problem. *Public Choice*, 1-11.

Barroy, H. and Gupta, S. (2020). From overall fiscal space to budgetary space for health: connecting public financial management to resource mobilization in the era of COVID-19. Geneva: World Health Organization. Available at: DOI: 10.1002/wat2.1621 (Accessed: 28 November 2022).

Bosch, H. J., Gupta, J. and Verrest, H. (2021). A water property right inventory of 60 countries. *Review of European, Comparative and International Law*, 30(2), pp. 263-274. DOI: 10.1111/reel.12397.

Bosch, H.J. and Gupta, J. (2022a). The tension between state ownership and private quasi-property rights in water. *WIREs Water*. Wiley Periodicals LLC. Available at: DOI: 10.1002/wat2.1621 (Accessed: 28 November 2022).

Bosch, H.J. and Gupta, J. (2022b). Water property rights in investor-state contracts on extractive activities, affects water governance: An empirical assessment of 80 contracts in Africa and Asia. *Review of European, Comparative, and International Law*, 31(2), pp. 295-316. DOI: 10.1111/reel.12436.

Burek, P., Satoh, Y., Fischer, G., Kahil, M.T., Scherzer, A., Tramberend, S., Nava, L.F., Wada, Y. et al. (2016). *Water Futures and Solution: Fast Track Initiative (Final Report)*. IIASA Working Paper. Laxenburg: International Institute for Applied Systems Analysis. Available at: <https://pure.iiasa.ac.at/id/eprint/13008/> (Accessed: 28 November 2022).

Collington, R. and Mazzucato, M. (2022). Beyond outsourcing: Re-embedding the State in public value production. UCL Institute for Innovation and Public Purpose, Working Paper Series (IIPP WP 2022-14). Available at: <https://www.ucl.ac.uk/bartlett/public-purpose/wp2022-14>.

Conca, K. (2006). *Governing water: Contentious transnational politics and global institution building*. Cambridge, MA: The MIT Press. Available at: <https://mitpress.mit.edu/9780262532730/governing-water/> (Accessed: 29 November 2022).

Dees, R. H. (2018). Public health and normative public goods. *Public health ethics*, 11(1), 20-26.

Deneulin, S. and Townsend, N. (2007). Public goods, global public goods and the common good. *International Journal of Social Economics*, 34(1-2), pp.19-36. DOI: 10.1108/03068290710723345.

Dolderer, J., Felber, C. and Teitscheid P. (2021). From Neoclassical Economics to Common Good Economics. *Sustainability*. 2021; 13(4):2093. <https://doi.org/10.3390/su13042093>

Dupré, L. (1994). The common good and the open society, In: Douglas, R.B. and Hollenbach, D. eds., *Catholicism and Liberalism*. Cambridge: Cambridge University Press, pp. 172-195.

Global Water Intelligence. (2011). Market-Leading Analysis of the International Water Industry. *Global Water Intelligence*, 2(12). Global Water Intelligence. Available at: [https://www.globalwaterintel.com/client\\_media/uploaded/GWI%20Dec11%20\(final\).pdf](https://www.globalwaterintel.com/client_media/uploaded/GWI%20Dec11%20(final).pdf) (Accessed: 28 November 2022).

Gov.uk. (2022). Joint statement on delivering the 100 Days Mission. Policy Paper. UK Government. Available at: <https://www.gov.uk/government/publications/joint-statement-on-delivering-the-100-days-mission> (Accessed: 29 November 2022).

G20 High Level Independent Panel (2019). A Global Deal for our Pandemic Age. Retrieved from <https://pandemic-financing.org/report/>

Grafton, Q. (2017). Responding to the 'Wicked' Problem of Water Insecurity. *Water Resources Management*, 31(10), 3023-3041. <https://doi.org/10.1007/s11269-017-1606-9>

Hess, C. & Ostrom, E. Ideas, Artifacts, and Facilities: Information as a Common-Pool Resource. *Law and Contemporary Problems*, 66, 111-146.

Hope, R., Thomson, P., Koehler, J. and Foster, T. (2020). Rethinking the Economics of Rural Water in Africa. *Oxford Review of Economic Policy*, 36(1), pp. 171–190. DOI: [10.1093/oxrep/grz036](https://doi.org/10.1093/oxrep/grz036).

Horne, L. C. (2019). Public health, public goods, and market failure. *Public health ethics*, 12(3), 287-292.

Hollenbach, D. (2002). *The Common Good and Christian Ethics*. Cambridge: Cambridge University Press.

Hutton, G. and Varughese, M. (2016). The Costs of Meeting the 2030 Sustainable Development Goal Targets on Drinking Water, Sanitation and Hygiene: Summary Report. Water and Sanitation Program. Washington, DC: World Bank. Available at: <https://openknowledge.worldbank.org/handle/10986/23681>.

Illingworth, P., & Parmet, W. E. (2017). 6. Health as a global public good. In *The Health of Newcomers* (pp. 115-132). New York University Press.

Jenkins, S. (2022). England's water industry now represents the unacceptable face of capitalism. *The Guardian*, 22 August 2022. Available at: <https://www.theguardian.com/commentisfree/2022/aug/22/england-water-industry-shareholders-sewage-dumped-rivers-sea> (Accessed: 19 December 2022).

Kattel, R. and Mazzucato, M. (2018). Mission-oriented innovation policy and dynamic capabilities in the public sector. *Industrial and Corporate Change*, 27(5), pp. 787–801.

Kattel, R., Mazzucato, M., Ryan-Collins, J. and Sharp, S. (2018). The economics of change: Policy and appraisal for missions, market shaping and public purpose. UCL Institute for Innovation and Public Purpose, Working Paper Series (IIP WP 2018-06). Available at: <https://www.ucl.ac.uk/bartlett/public-purpose/publications/2018/jul/economics-change-policy-and-appraisal-missions-market-shaping-and-public> (Accessed: 29 November 2022).

Kaul, I., Grunberg, I. and Stern, M.A. eds. (1999). *Global Public Goods: International Cooperation in the 21<sup>st</sup> Century*. Oxford: Oxford University Press.

Kaul, I. (2016). *Global Public Goods*. The International Library of Critical Writings in Economics series.

Kolker, J., Kingdom, B., Tremolet, S., Winpenny, J. and Cardone, R. (2016). Financing Options for the 2030 Water Agenda. Water Global Practice Knowledge Brief. Washington, DC: World Bank. Available at: <https://openknowledge.worldbank.org/handle/10986/25495> (Accessed: 29 November 2022).

- Landscape Architecture Built. 2020. Turenscape. Available at: <https://www.landscapearchitecturebuilt.com/turenscape/> (Accessed: 19 December 2022).
- Macfarlane, L. and M. Mazzucato. (2018). State investment banks and patient finance: An international comparison. UCL Institute for Innovation and Public Purpose, Working Paper (IIPP WP 2018-01).
- Mas-Colell, A., Whinston, M. D. & Green, J. R., (1995). *Microeconomic Theory* (vol. 1). Oxford University Press.
- Mazzoleni, R. and Nelson, R. R. (1998). The benefits and costs of strong patent protection: a contribution to the current debate. *Research Policy*, 27(3), pp. 273-284. DOI: 10.1016/S0048-7333(98)00048-1.
- Mazzucato, M. (2013). *The entrepreneurial state: Debunking public vs. private sector myths*. London: Anthem Press.
- Mazzucato, M. (2016). From market fixing to market-creating: A new framework for innovation policy. *Industry and Innovation*, 23(2), pp. 140-156.
- Mazzucato, M. (2018a). Mission oriented innovation policy: Challenges and opportunities. *Industrial and Corporate Change*, 27 (5), pp. 803-815. DOI: 10.1093/icc/dty034.
- Mazzucato, M. (2018b). *The Value of Everything: Who makes and who takes from the Real Economy*. Public Affairs.
- Mazzucato, M. (2020). Mission-oriented public procurement: international examples. UCL Institute for Innovation and Public Purpose, Policy Report (IIPP 2020-20). Available at: <https://www.ucl.ac.uk/bartlett/public-purpose/pr2020-20> (Accessed: 29 November 2022).
- Mazzucato, M. (2021). *Mission Economy. A Moonshot Guide to Changing Capitalism*. London: Allen Lane.
- Mazzucato, M. (2022). Rethinking the social contract between the state and business: a new approach to industrial strategy with conditionalities. UCL Institute for Innovation and Public Purpose, Working Paper Series (IIPP WP 2022-18). Available at: <https://www.ucl.ac.uk/bartlett/public-purpose/wp2022-18>.
- Mazzucato, M. and Collington, R. (2023, forthcoming). *The Big Con: How the consulting industry weakens our businesses, infantilizes our governments, and warps our economies*. Allen Lane.
- Mazzucato, M., Conway, R., Mazzoli, E. M., Knoll, E. and Albala, S. (2020a). Creating and measuring dynamic public value at the BBC. UCL Institute for Innovation and Public Purpose, Policy Report, (IIPP 2020-19). Available at: <https://www.ucl.ac.uk/bartlett/public-purpose/publications/2020/dec/creating-and-measuring-dynamic-public-value-bbc> (Accessed: 29 November 2022).
- Mazzucato, M. and Dibb, G. (2019). *Missions: A Beginner's Guide*. UCL Institute for Innovation and Public Purpose, Policy Brief series (IIPP PB 09). Available at: <https://www.ucl.ac.uk/bartlett/public-purpose/publications/2019/dec/missions-beginners-guide> (Accessed: 28 November 2022).
- Mazzucato, M., & Donnelly, A. (2022). The world is still failing at pandemic preparedness and response. Project Syndicate. Retrieved from <https://www.project-syndicate.org/commentary/health-investment-failing-at-pandemic-preparedness-response-by-mariana-mazzucato-and-alan-donnelly-2022-11?barrier=accesspaylog>

Mazzucato, M. and Kattel, R. (2020). COVID-19 and public-sector capacity. UCL Institute for Innovation and Public Purpose, Working Paper Series (IIPP WP 2020-12). Available at: <https://www.ucl.ac.uk/bartlett/public-purpose/wp2020-12>.

Mazzucato, M., Kattel, R., Albala, S., Dibb, G., McPherson, M. and Voldsgaard, A. (2020b). Alternative policy evaluation frameworks and tools. BEIS Research Paper, Number 2020/044. London: Open Government License. Available at: <https://www.ucl.ac.uk/bartlett/public-purpose/publications/2020/nov/alternative-policy-evaluation-frameworks-and-tools> (Accessed 29 November 2022).

Mazzucato, M., Lishi Li, H. and Torreele, E. (2020c). Designing Vaccines for People, Not Profits. Project Syndicate, 1 December 2020. Available at: <https://www.project-syndicate.org/commentary/covid-vaccines-for-profit-not-for-people-by-mariana-mazzucato-et-al-2020-12?barrier=accesspaylog>.

Mazzucato, M. and Macfarlane, L. (2017). Patient Strategic Finance: Opportunities for state investment banks in the UK. UCL Institute for Innovation and Public Purpose, Working Paper Series (IIPP WP 2017-05). Available at: <https://www.ucl.ac.uk/bartlett/public-purpose/publications/2017/dec/patient-strategic-finance-opportunities-state-investment-banks-uk> (Accessed: 28 November 2022).

Mazzucato, M. and Macfarlane, L. (2019). A mission-oriented framework for the Scottish National Investment Bank. UCL Institute for Innovation and Public Purpose, Working Paper Series (IIPP WP 2019-02). Available at: <https://www.ucl.ac.uk/bartlett/public-purpose/publications/2019/mar/mission-oriented-framework-scottish-national-investment-bank> (Accessed 28 November 2022).

Mazzucato, M. and Mikheeva, O. (2020). The EIB and the new EU missions framework: Opportunities and lessons from the EIB's advisory support to the circular economy. UCL Institute for Innovation and Public Purpose (IIPP), Policy Report (IIPP WP 2020-17). Available at: <https://www.ucl.ac.uk/bartlett/public-purpose/publications/2020/nov/eib-and-new-eu-missions-framework>.

Mazzucato, M. and Ryan-Collins, J. (2022). Putting value creation back into 'public value': From market fixing to market shaping. *Journal of Economic Policy Reform*, 25(4), pp. 345-360. DOI: 10.1080/17487870.2022.2053537 (Accessed 28 November 2022).

Mekonnen, M. M. and Hoekstra, A. Y. (2016). Four billion people facing severe water scarcity. *Science Advances*, 2(2). DOI: 10.1126/sciadv.1500323.

Meran, G., Siehlow, N. and von Hirschhausen, C. (2021a). Water Availability: A Hydrological View. In: *The Economics of Water*. Springer Water. Springer. DOI: 10.1007/978-3-030-48485-9\_2.

Meran, G., Siehlow, M. and von Hirschhausen, C. (2021b). Integrated Water Resource Management: Principles and Applications. In: *The Economics of Water*. Springer Water. Springer, Cham. [https://doi.org/10.1007/978-3-030-48485-9\\_3](https://doi.org/10.1007/978-3-030-48485-9_3)

Miedzinski, M., Mazzucato, M. and Ekins, P. (2019). A framework for mission-oriented innovation policy roadmapping for the SDGs: The case of plastic-free oceans. UCL Institute for Innovation and Public Purpose, Working Paper Series (IIPP WP 2019-03). Available at: <https://www.ucl.ac.uk/bartlett/public-purpose/wp2019-03> (Accessed: 29 November 2022).

MOIIS. (2019). A Mission-Oriented UK Industrial Strategy. UCL Commission for Mission-Oriented Innovation and Industrial Strategy (MOIIS) co-chaired by Mazzucato, M. and Willets, D. UCL Institute



for Innovation and Public Purpose, Policy Report, (IIPP 2019-04). Available at: <https://www.ucl.ac.uk/bartlett/public-purpose/publications/2019/may/mission-oriented-uk-industrial-strategy> (Accessed: 28 November 2022).

Murphy, T. and Parkey, J. (2016). An economic analysis of the philosophical common good, *International Journal of Social Economics*, 43(8), pp. 823-839.

Ostrom, E. (1990). *Governing the Commons: The Evolution of Institutions for Collective Action* (Canto Classics). Cambridge: Cambridge University Press. DOI: 10.1017/CBO9781316423936.

Ostrom, E. and Gardner, R. (1993). Coping with Asymmetries in the Commons: Self-Governing Irrigation Systems Can Work. *Journal of Economic Perspectives*, 7(2), pp. 93-112.

O'Sullivan, M. (2006). Finance and Innovation, In: Fagerberg, J. and Mowery, D. C., eds. *The Oxford Handbook of Innovation*. Oxford Academic. Available at: <https://academic.oup.com/edited-volume/38667/chapter/335804716> (Accessed: 28 November 2022).

OECD (2018). *Financing Water: Investing in Sustainable Growth. Policy Perspectives*. OECD Environment Policy Paper, No. 11. OECD. Available at: <https://www.oecd.org/water/Policy-Paper-Financing-Water-Investing-in-Sustainable-Growth.pdf> (Accessed: 29 November 2022).

Ofwat. (2022). *Water Sector Overview*. Office of Water Services, UK Government. Available at: <https://www.ofwat.gov.uk/regulated-companies/ofwat-industry-overview/> (Accessed: 5 December 2022).

Reuters. (2021). World has entered stage of 'vaccine apartheid' – WHO head. Reuters, 17 May 2021. Available at: <https://www.reuters.com/business/healthcare-pharmaceuticals/world-has-entered-stage-vaccine-apartheid-who-head-2021-05-17/> (Accessed: 29 November 2022).

Rockström, J. et al. (2014). The unfolding water drama in the Anthropocene: towards a resilience-based perspective on water for global sustainability. *Ecohydrology Bearings – Invited Commentaries*, 7(5), pp. 1249-1261. DOI: 10.1002/eco.1562.

Samuelson, P., (1947). *Foundations of economic analysis*. Harvard Economic Studies. Vol. 80. Harvard University Press.

Samuelson, P. A. (1954). The pure theory of public expenditure. *Review of Economics and Statistics*, 36(4), pp. 387-389. Available at: [https://www.jstor.org/stable/1925895#metadata\\_info\\_tab\\_contents](https://www.jstor.org/stable/1925895#metadata_info_tab_contents) (Accessed: 5 December 2022).

Shiklomanov, I. A. (1990). World fresh water resources. In: Gleick, P. H. ed., *Water in crisis: A guide to the world's fresh water resources*. New York: Oxford University Press, pp.13-24.

Smith, R., Woodward, D., Acharya, A., Beaglehole, R., and Drager, N. (2004). Communicable disease control: a 'Global Public Good' perspective. *Health Policy and Planning*, 19(5), 271-278.

Snellen, W. B. and Schrevel, A. (2004). IWRM for sustainable use of water: 50 years of international experience with the concept of integrated water management. In: *Proceedings of the Netherlands Conference on Water for Food and Ecosystems*, vol. 31.

South Africa Government. (2020). *Water and Sanitation*, In: *Official Guide to South Africa 2020/2021* South Africa Government. Available at: <https://www.gcis.gov.za/sites/default/files/docs/resourcecentre/pocketguide/24WaterSanitation2021.pdf> (Accessed: 5 December 2022).

Torreale, E. (forthcoming). Transforming Health Innovation for Epidemics: A common goods approach with equity and resilience at its core. Independent Panel Discussion Paper.

UNICEF. (2021). Reimagining WASH: Water Security for All. New York: United Nations Children's Fund (UNICEF). Available at: <https://www.unicef.org/reports/reimagining-wash-water-security-for-all> (Accessed 28 November 2022).

UCL IIPP. (2021). Mission-Oriented Innovation in Action 2021 Casebook. London: UCL Institute for Innovation and Public Purpose (UCL IIPP). Available at: [https://www.ucl.ac.uk/bartlett/public-purpose/sites/bartlett\\_public\\_purpose/files/final\\_moin\\_casebook\\_2021\\_edited\\_2022\\_updated\\_final.pdf](https://www.ucl.ac.uk/bartlett/public-purpose/sites/bartlett_public_purpose/files/final_moin_casebook_2021_edited_2022_updated_final.pdf) (Accessed: 16 December 2022).

Water Policy Group. (2021). Global Water Policy Report 2021: Listening to National Water Leaders. Available at: <http://waterpolicygroup.com/wp-content/uploads/2022/02/2021-Global-Water-Policy-Report-4-Feb-2022.pdf> (Accessed: 16 December 2022).

Watson, J. (2021). Lo-TEK: Design by Radical Indigenism. Taschen.

WHO. (2021a). Governing health innovation for the common good. Council Brief No. 1. Geneva: WHO Council on the Economics of Health for All. Available at: <https://cdn.who.int/media/docs/default-source/council-on-the-economics-of-health-for-all/councilbrief-no1.pdf> (Accessed: 29 November 2022).

WHO. (2021b). Strengthening public sector capacity, budgets and dynamic capabilities towards Health for All. Council Brief No. 4. Geneva: WHO Council on the Economics of Health for All. Available at: <https://cdn.who.int/media/docs/default-source/council-on-the-economics-of-health-for-all/councilbrief-no1.pdf> (Accessed: 16 December 2022).

WHO. (2021c). Innovation for the common good. Retrieved from <https://www.who.int/publications/m/item/governing-health-innovation-for-the-common-good>

WHO and UN OHCHR. (2022). A Human Rights-Based Approach to Health. World Health Organization and United Nations Human Rights Office of the High Commissioner. Available at: [https://www.ohchr.org/sites/default/files/Documents/Issues/ESCR/Health/HRBA\\_HealthInformationSheet.pdf](https://www.ohchr.org/sites/default/files/Documents/Issues/ESCR/Health/HRBA_HealthInformationSheet.pdf) (Accessed: 29 November 2022).

[ucl.ac.uk/iipp](https://ucl.ac.uk/iipp)

 [@IIPP\\_UCL](https://twitter.com/IIPP_UCL)

UCL Institute for Innovation and Public Purpose  
11 Montague Street, London, WC1B 5BP

**Enquiries:**

For any queries or comments on the paper,  
please contact: [iipp-research@ucl.ac.uk](mailto:iipp-research@ucl.ac.uk)

