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# Plan Bee: The Case of an Islamic Honey Cooperative in Morocco

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## Abstract

*Taddaret Inzerki* is an indigenous honey cooperative (i.e. apiary) in rural Morocco that has operated autonomously for centuries. To understand the devolved status of the apiary, and accordingly, explore the often overlooked field of (non-Western) traditional community-based administrative systems and practices, this essay first provides a brief summary of devolution theory (based on Althusius' *Politica*) and the track record of similar policies in the context of natural resource management. The case of *Taddaret Inzerki*, which is the core contribution of the essay, is then presented along the lines of a Geertzian thick description, revealing both the apiary's historical foundation and its three enduring institutional goals stemming from the rules of the commons: ensuring the welfare of bees, properly treating fellow beekeepers, and fulfilling Islamic requisites. The result for the villagers upholding their sacred craft of Islamic beekeeping is that they are able to generate a reliable livelihood and preserve their shared natural resource commons. However, this essay argues that this administrative arrangement also proves beneficial at the national and even global level, and concludes by suggesting potential avenues of future research.

**Keywords:** Devolution, Althusius, Natural Resource Management, ICCA, *zawāyā*, Islamic Indigenous Cooperative, Islamic Beekeeping, *Taddaret Inzerki*

## 1. Introduction

This essay aims to contribute to research on local devolution, i.e. extensive municipal autonomy or "immunity from interference from the centre" (Føllesdal 2011, 337; see Drechsler 2008, Drechsler 2013a), in an Islamic context by exploring the case of a rural indigenous honey cooperative (i.e. apiary) in Morocco, which in itself is the focus of what follows. Located in the western High Atlas, and founded in the 16<sup>th</sup> century as an offshoot of a *zāwiya*<sup>1</sup> (a dynamic Islamic institution of both worship and public service provision; see Chafik and Drechsler 2022), *Taddaret Inzerki* is the largest and oldest traditional apiary in the world (Afriyad 2013). Drawing on data collected between autumn 2021 and spring 2022 from extensive ethnographic research, this essay examines how the apiary is organized and run by the local community as a highly autonomous commons with unmistakably sacred (i.e. Islamic) institutional goals, values, and practices, and how this alternative governance arrangement ultimately generates both globally relevant ecological benefits and local, otherwise sparse, economic opportunities. These successes make *Taddaret Inzerki* a clear example of when traditional and seemingly obsolete institutions that have managed to survive at the margins of society

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<sup>1</sup> All non-English (Arabic, Tamazight, Latin) words in the essay are italicized, with the exception of proper names and terms common in English.

are able to step up with readily available and resilient institutional answers to today's needs and challenges (for a Nepalese case, see Shakya 2021, 156–158).

What is particularly interesting from the administrative policy perspective is how and why this arrangement is made the way it is. The Moroccan government included the apiary alongside several thousand local initiatives in its ambitious ~€1.9 billion *Al-Maghrib Al-Akhdar* (Green Morocco) Plan to fund rural agriculture and farming, and granted the apiary national and international (alongside multiple stakeholders) cultural and ecological heritage status and related assistance (Hekking 2020). This support and recognition appear to be part of a broader (post-Arab Spring) national decentralization strategy that has occasionally been criticized for having led to mixed results (Houdret and Harnisch 2019). However, in the case of *Taddaret Inzerki*, this essay argues that the Moroccan state's conscious devolution policy to an Islamic indigenous cooperative has been a successful one indeed – resulting in a 'triple-benefit'. Specifically, the apiary is not only providing the local community with an alternative (Islamic), reliable, and sustainable economic livelihood, but it is through these alternative (Islamic) goals, values, and practices that the apiary cultivates content, exemplar rural citizens who are loyal to the Moroccan state as a matter of piety and identity. Beyond the benefit of local citizens and the state, the positive ecological impact of the apiary and the traditional model by which it is achieved are, perhaps counterintuitively to some, timely and beneficial contributions to our 21<sup>st</sup>-century world.

This essay therefore proceeds with a brief introduction of the theory underlying devolution policy, drawing in particular (from the global-Western perspective's context) on the late Renaissance jurist and philosopher Johannes Althusius, contemporary environmental and resource management efforts, and the role of local or indigenous cooperatives in managing the commons. Section 3 begins the case study by discussing the foundation and history of the apiary – the context of which is necessary for understanding both its enduring Islamic status and its suitability for devolution. Section 4 then presents the core findings of the ethnographic research in terms of the apiary's Islamic goals, values, and practices and how that translates into economic and environmental value for the local population. This is followed by Section 5, which argues that the triple-benefit is real, that is, the strategic and mutually beneficial nature of the Moroccan state's devolution policy vis-à-vis the apiary and its broader successes. Section 6 highlights important limitations, questions, and topics for further research raised by the findings (e.g. lessons for local devolution, principles of local-level Islamic Economics, the notion of an Islamic commons, investigating the ecological impact of sacred beekeeping) before Section 7 concludes.

## **2. Devolution, Indigenous Cooperatives, and Natural Resource Commons**

Devolution is a governance principle that is focused on the scale of rights and responsibilities, namely, transferring them from higher to lower levels so as to bring "citizens, local groups and organizations into the policy and decision-making process" (Berkes 2010, 491). One of the earliest and most prominent theorists on devolution is the German jurist and philosopher Johannes Althusius (1563–1638), even to the extent of being credited with being the founding father of modern Western political theory through his conception of Governance (1995, ix).

His work *Politica Methodice Digesta* (1603) (Althusius 1981; Althusius 1995) is helpful both in understanding the origins of devolution theory within the present-day paradigm of governance and administration (Drechsler 2013b, Pollitt 2015) and in highlighting the commonalities in practice with the Islamic paradigm explored through the case of *Taddaret Inzerki*.

Althusius, as the Calvinist town syndic of Emden, adamantly "sought to maintain its autonomy vis-a-vis its Lutheran provincial Lord and the Catholic Emperor" (Føllesdal 1998). He did so by first positing that every human association concerning two or more people is political<sup>2</sup> and can be taxonomized as one of five types, with each successive association being a combination of the preceding one(s): family, *collegium*, city, province, and realm (i.e. the state) (Althusius 1995, xv-xxi).

Of most interest for the present essay is the *collegium*, which maps neatly with the modern term cooperative (apart from gender inclusivity), as it is defined as "three or more men of the same trade, training, or profession [being] united for the purpose of holding in common such things they jointly profess as duty, way of life, or craft" (Althusius 1995, 34). Members of a *collegium* (i.e. colleagues) "live, are ruled, and are obligated in their collegium by the same right and laws ..., and are even punished for proper cause according to them, provided this is done without infringing upon the magistrate or usurping an alien jurisdiction" (Althusius 1995, 36).

As for how and why this autonomy exists, Althusius explains that the state and its leadership (in the form of a magistrate) do not hold supreme authority as in the unchallenged right to arbitrarily pursue and neglect matters of their choosing, but rather they are supreme in the sense of having subordinate magistrates or political associations, i.e. the provinces, cities, *collegium*, and families of the realm:

The magistrate is called supreme because he exercises not his own power, but that of another, namely, the supreme power of the realm of which he is the minister. Or he is so called in relation to inferior and intermediate magistrates who are appointed by and depend upon this supreme power, and for whom he prescribes general laws (1995, 120).

For Althusius, this delegation to, and prescription of general laws upon, subordinate magistrates inherently restricts the direct action of the magistrate (the central state) since "by political understanding a magistrate sees, recognizes, knows, and comprehends the things that he is to do or *to omit* by reason of his office" (1995, 137; author's emphasis). More explicitly, as a matter of principle, the central state should have 'political prudence': the wisdom not to involve itself in matters concerning lower-level (self-governing) political associations, and indeed must recognize the say in and about their own community and its affairs, i.e. their autonomy (Drechsler 2013a).

Naturally, those in closer proximity to these matters should be able to address them in a more adequate manner. This brings us to the principle of subsidiarity, which despite the extensive debate surrounding the application of the concept (Golemboski 2015), is commonly understood to be that decisions and tasks should be taken at the most immediate or local level to where they can be implemented competently (Føllesdal 1998). Based on his observation of Burmese traditional society in the 1950s, the British-German economist E.F. Schumacher identified subsidiarity as the first principle by which large-scale organizations or even society as a whole can succeed (1973).

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<sup>2</sup> Althusius refers to politics itself as "symbiotics", or the art of living together (1995, xv).

However, Althusius stresses that with autonomy comes the necessity of respecting the general laws and higher sovereignty of the magistrate, so that it is not the case that "popular licence be permitted to the extent that it reduces respect for the king or upsets the affairs of the commonwealth" (1995, 175). He continues: "A reverent attitude toward the magistrate derives from imperium and a favourable opinion about the magistrate's exercise of authority. ... This respect for authority is composed of the admiration and fear that arise from the ruler's form of imperium, his greatness, and his moral qualities" (1995, 154). To bring in the Islamic framework, the description put forth by Althusius of this 'reverent attitude' is a strikingly accurate summary of the sacred soft power attributed to the ruling Alawite Monarchy by the Moroccan public due to the Islamic nature of its authority, namely, descent from the Prophet PBUH (Chafik and Drechsler 2022; Daadaoui 2011). The dynamics of the central Moroccan state devolving power to a rural *collegium* in the form of an apiary will be explored shortly.

First, however, it is important to very briefly highlight various contemporary efforts to devolve decision-making authority and responsibility to the local level in the context of community-based natural resource management of forests, wetlands, protected areas, wildlife, etc. These efforts have faced certain recurring challenges, such as the fragmenting of management responsibility for ecosystems, opportunistic seizure of resources by elites and further marginalization of disadvantaged locals, insufficient understanding of the diversity of local institutions, which can range from positive to destructive in terms of natural resources and social relations, and, notoriously, insufficient transfer of powers to local institutions from central authorities (Kamoto et al. 2013; Berkes 2010; Ribot 2002). The common theme among these issues is an externally designed natural resource management devolution policy that ultimately does not value the importance of, nor trust in, local autonomy.

Moreover, although the rhetoric of devolution in the sense of shifting rights and responsibilities to indigenous people as an alternative to costly, ineffective, and aloof centralized control is by now ubiquitous in natural resource management, in practice there are often new institutions created that bear little to no resemblance to indigenous institutions, values, or goals (Natcher and Davis 2007). This runs in stark contrast to the theory of the commons, which empirically highlights and recognizes the role of indigenous institutions (i.e. cooperatives) in managing common property resources in resilient ways (classically, see Ostrom 1990).

Indeed over long historical periods, indigenous cooperatives have been found to conserve, restore, and enhance natural resources and at times even the biodiversity of the commons they populate and administer (Gadgil et al. 1993). This accumulation of traditional ecological knowledge is a lived process that is fundamentally based on honored – in many cases sacred – indigenous values and practices passed on through generations (Berkes 2018). One could argue that this alone warrants inquiry into the case of *Taddaret Inzerki*, especially due to, and this is one of the more striking characteristics of the apiary, its absence from the academic literature (apart from a handful of publications in French). More broadly, although the literature features cases of extant indigenous cooperatives that are intimately tied to a diverse range of belief systems, there is a notable dearth regarding cases of Islamic indigenous cooperatives that are neither historical (Sabrina 2015) nor theoretical (Mangunjaya 2013).

The obvious question for contemporary devolution policy concerning municipal Muslim populations and the management of their natural resources therefore becomes: instead of creating new institutions based on non-local contexts to transfer only limited authority to, would it not be more beneficial for a central state to support, resuscitate (if necessary),



and genuinely devolve power to Islamic indigenous cooperatives that are, and have been, successfully stewarding their local commons? In an attempt to answer, we turn to the case of *Taddaret Inzerki* – the core contribution of the essay – after a note on methods.

The following data were collected through *in situ* ethnographic fieldwork conducted between September and October 2021 in the villages of Inzerki and Tafilalt, in addition to remote follow-up interviews over the subsequent six months with half a dozen villagers. The author, aided by affiliation with and knowledge of the local language and customs, and committed to upholding culturally sensitive research methods (Smith 2021, Archibald et al. 2019, Chilisa 2019) with the indigenous community involved, utilized a discursive approach. The research design was therefore focused on understanding the subjective role and perspectives of embedded actors to understand a social phenomenon through 1) semi-structured interviews around what is happening and how as opposed to justifying why things are as they are (Zittoun 2021), and 2) firsthand participant observation of quotidian activities, i.e. the ‘go-along’ method of ethnographic research (Kusenbach 2003). As a result, the case is an attempt to assemble and relay the perspectives, history, values, and lived experiences of the indigenous villagers into an intricate, though readable, text; along the lines of, and almost forming, a thick description<sup>3</sup> in Clifford Geertz’ anthropological sense (1973). Therefore, as customary, the author does not cite individual interviews and only occasionally brings in external references for elucidation or corroboration of larger matters of fact and context. Much of the information about the apiary itself is based on these interviews as well and must be read accordingly.

### 3. The Foundation of an Islamic Apiary

*Taddaret Inzerki* (the home of Inzerki) is said to be the oldest and largest traditional apiary (place where honey beehives are kept/honey production takes place) in the world. It was first constructed in 1520 using wood, rock, and adobe, i.e. a traditional building material made by mixing earth, water, straw and/or manure (Afriyad 2013). The story of the apiary begins with a man from the village of Inzerki who had some experience and a keen interest in beekeeping, wanting to seek the *baraka* (divine blessings) and counsel of a regionally esteemed *Shaykh*<sup>4</sup> in the matter.

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<sup>3</sup> Geertz formulated the ethnographic concept of ‘thick description’ through extensive fieldwork in the Islamic world, in Indonesia and, notably, Morocco (see Geertz 1971).

<sup>4</sup> A *Shaykh* (plural: *Shuyūkh*) in this context, and others, is a person who both masters (in terms of education and scholarship) and embodies (in terms of practice and teaching) the Islamic sciences.



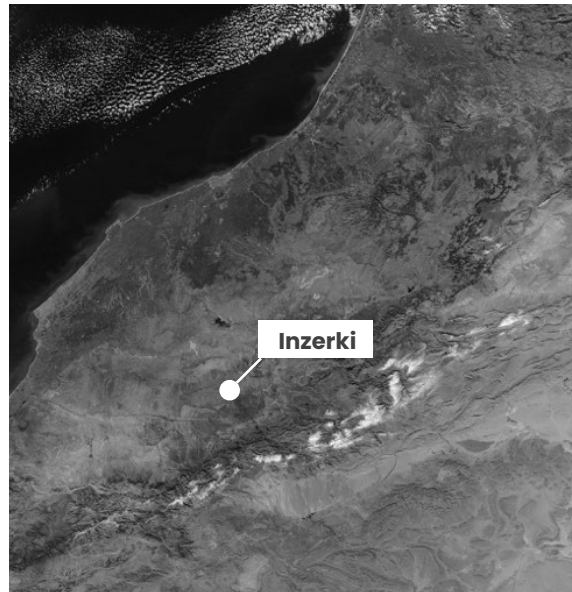


Figure 1: approximate location of Inzerki (original map source: NASA Visible Earth)

*The Shaykh*, Sidi Muhammad Bin Alhussein, led a local branch of the Nasiri *Zāwiya* in the remote and difficult-to-access mountain village of Tafilalt, which is 20 km from Inzerki by bird’s flight. A *zāwiya* (plural: *zawāyā*) can refer to a centuries-old physical place of worship akin to a mosque, but the term also refers to the lived community of people making up an Islamic *collegium* – fundamentally driven by the self-purification and service aspect of Islam known as Sufism – that both frequent the physical place and Islamically design and deliver alternative public-service provision (Chafik and Drechsler 2022). After making the rugged journey to the *zāwiya* from Inzerki, the Nasiri *Shaykh* prayed (to God for assistance) for the man, and advised him on the paramount importance of first seeking out a location where the bees could be at ease and only then proceed with laying just a single hive.



Figure 2: a view of the village of Tafilalt from atop the *zāwiya* (this and all photographs taken by author Sept-Oct 2021)

But one may rightly wonder: Why would the *Shaykh* be so concerned about the welfare of honeybees? More generally, what good advice could a *Shaykh* who had no working knowledge of, or experience in, beekeeping possibly give? And why would *baraka* be relevant or important enough for the man to make the difficult trek to the *Shaykh* in the first place? Briefly answering these questions helps shed light on how the underlying worldview and ambitions of the apiary were (and as this essay will later demonstrate, are still) embedded within Islam.

The Nasiri *Shaykh* understood, as any educated scholar of the Islamic tradition, that although all animals have unequivocal rights in Islam, bees are given a special status. Indeed they are mentioned explicitly and have a namesake chapter in the Qur’ān, in verses that are cited regularly by the beekeepers of Inzerki today when describing how they understand the status and wellbeing of bees:

وَأَوْحَىٰ رَبُّكَ إِلَى النَّحْلِ أَنْ اتَّخِذِي مِنَ الْجِبَالِ بُيُوتًا وَمِنَ الشَّجَرِ وَمِمَّا يَعْرِشُونَ  
ثُمَّ كُلِي مِن كُلِّ الثَّمَرَاتِ فَاسْلُكِي سُبُلَ رَبِّكِ ذُلَالًا يَخْرُجُ مِنْ بُطُونِهَا شَرَابٌ مُخْتَلِفٌ أَلْوَانُهُ  
فِيهِ شِفَاءٌ لِلنَّاسِ إِنَّ فِي ذَلِكَ لَآيَةً لِّقَوْمٍ يَتَفَكَّرُونَ

And your Lord inspired the bees: ‘Make your homes in the mountains, the trees, and in what people construct, then feed from the flower of any fruit you please, and follow the ways your Lord has made easy for you.’ From their bellies comes forth liquid of varying colors, in which there is healing for people. Surely in this is a sign for those who reflect (16:68–69, author’s translation and emphasis).

The logic behind the *Shaykh*’s advice can therefore be understood in three parts:

1. The verses affirm that not only mountains and trees, but any human-made structure can be divinely-sanctioned bee lodging,
2. Bees are divinely encouraged to pursue what is easy for them and in doing so produce a liquid (i.e. honey) that is a remedy for people, and therefore,
3. Surely one clear sign for the pious is that a human-made apiary that sees to the ease and comfort of bees can await the divinely-promised benefit of healing honey.

As for seeking *baraka* from pious individuals such as the Nasiri *Shaykh*, this is a widespread Sufi practice rooted in the belief held by *zawāyā* that blessings do not come from the individual themselves, but rather that this person is known to sincerely strive for the sacred path and, therefore, naturally attract divine blessings and grace. Accordingly, when such an individual gives their approval and prays for the success of something that they are approached for advice on, it is believed that the endeavor will not only be temporarily successful but also carry with it an abundance of *baraka* and protection in the future (in the context of an apiary from, e.g., drought, floods, communal strife, etc).

To return to the story of the apiary, the man returned to Inzerki and – heeding the *Shaykh*’s advice on the wellbeing of the bees – eventually chose the southern facing slope of a nearby valley surrounded by mountains and diverse flora to lay his first hive. This location also provided ample sunlight and protection against the wind. When it was time to harvest the

honey from the single hive, the man decided to once again make the journey to the *zāwiya* so that he could gift the honey to the Nasiri *Shaykh*. The *Shaykh* warmly received the honey and immediately divided it amongst his students at the *zāwiya*, and after making further prayers for Allah to grant *baraka* in the man’s beekeeping efforts going forward, he promised to pay him a visit to Inzerki during the next season’s honey harvest.

The Nasiri *Shaykh* kept his promise and upon seeing and appreciating the location that the man chose to lay his hive, he suggested that the beekeeper build a structure that could house multiple stationary hives. The man was grateful to oblige the *Shaykh*’s suggestion and proceeded to build a small adobe hut for his hives, along with the help of the other villagers. After having learned the story of the Nasiri *Shaykh*’s prayers and the man’s visit to the *zāwiya* in Tafilalt to gift the honey, the villagers of Inzerki were eager to construct their own huts so that they too could take part in the blessed enterprise.

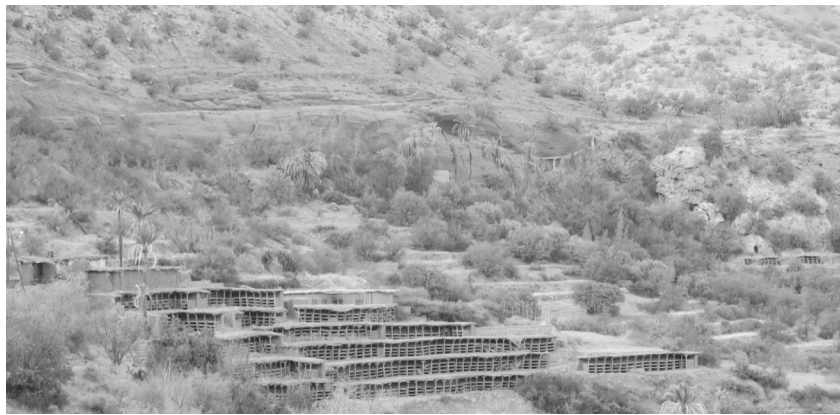


Figure 3: *Taddaret Inzerki*

Thus was born both the apiary of *Taddaret Inzerki* and the tradition of an annual festival whereby the villagers of Inzerki gift the first honey harvest of the year to the Nasiri *Zāwiya* of Sidi Muhammad in Tafilalt – whose reputation of feeding students honey is well known in the region to this day. In fact, the annual honey-gifting festival was discontinued only in 1980, when a series of annual droughts rendered the apiary nearly inoperative. However, in the last decade, both *zāwiya* and apiary have seen a parallel rejuvenation and concerted effort in restoring their institutional missions. For the former, this is running what is known as a *madrassa nizamiya* (Islamic school), where students live and study (named after the educational system established by the 11<sup>th</sup>-century Seljuk statesman and scholar Nizam al-Mulk), and for the latter, this is implementing traditional Islamic beekeeping and honey production (Ait Bounsar 2020). The leadership of both institutions remain in constant contact, are on good terms, and speak sentimentally about the prospect of re-establishing the honey gifting ritual. Additionally, the apiary leadership have plans of relaunching an annual festival to celebrate at least one of the various seasonal honey harvests.



Figure 4: traditional home in Inzerki

Another regional branch of the Nasiri *Zāwiya*, known as Sidi Abdullah Ou Said, also visits Inzerki on an annual basis for a different festival. In late summer, the leadership of the *zāwiya* arrive to Inzerki and throw salt on the villagers’ houses so as to protect them from scorpions, spiders, snakes, etc. They also do a public reading of Qur’ān and prayer for the apiary and larger agricultural activities of the village to be fruitful and protected from drought, harmful insects, wild boars, etc. The villagers have long believed that there is a tangible difference (i.e. more blessings and protection) before and after the salt-throwing and prayers take place, and therefore gift the *zāwiya* leadership a portion of their summer harvest: the crops and trees in the valley apart from the honey, which is out of season at that time.

The intimate association of the villagers of Inzerki, and their *collegium*, with the Nasiri-affiliated *zawāya* and their beliefs and practices is indicative of the centrally embedded role of Islam in their identity and worldview. This was not only the case hundreds of years ago, but up to the present day – a topic we now turn to in the next section.

#### **4. Rules of the (Islamic) Commons & Economic Empowerment**

Located in the mostly rural Sous region of Morocco, the namesake village of Inzerki today has an Amazigh (indigenous people of north and west Africa) population of around 250, with unreliable access to grid electricity and water, and no access to a paved road. Unsurprisingly for such a remote place, the apiary serves as the sole economic opportunity for most of the residents of Inzerki. More broadly, the indigenous population of the village has experienced genuine and continuous autonomy over their affairs since at least the founding of the apiary, which predates the establishment of the currently ruling Alawite monarchy (the oldest of the Arab world) by over a century. Through the collaborative support of the Moroccan government, the UN Environment Program, the German BMUV, and the International Union for Conservation of Nature, the apiary today is recognized for its cultural and ecological value as an Indigenous and Community Conserved Area or ICCA (see also Figure 5).





Figure 5: infographic at the foothills of the apiary

Functionally, Taddaret Inzerki is structured so that each family in the village has a set allocation of huts in the apiary where they (or any person they choose to allow) can lay their bee hives, harvest honey during one of the various times of year (depending on the nectar season), and consume and/or sell it (although in reality it is mostly small children who focus on the former). The collective apiary contains approximately 150 huts, with each hut containing 4 levels and the capacity to hold 15–20 traditional hives, with the population of honey bees having access to a diverse range of flowers for nectar: Acacia, Date Palm, Carob, Juniper, Lavender, Oregano, Prickly Pear, Thyme, and – exclusively to the region – Argan.

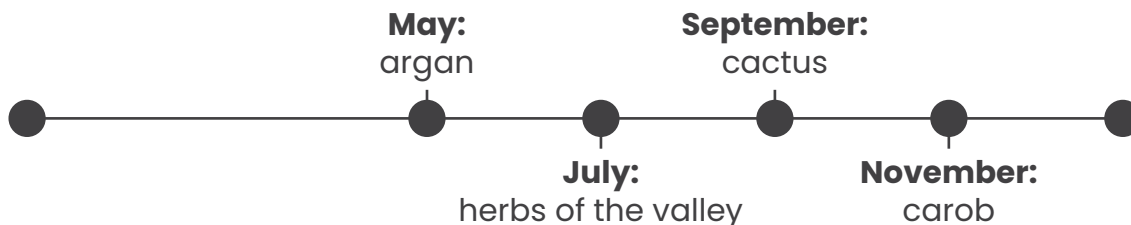


Figure 6: annual Honey Harvests of Taddaret Inzerki

The apiary does not charge fees for laying hives, nor does it take commissions on the honey produced, but it is instead run as a community-led natural resource commons – following the general principles empirically observed in similar traditional institutions elsewhere (Cox et al. 2010). However, a distinctive set of ‘rules for the commons’ have remained intact in Inzerki for more than half a millennium, not in written form, but passed down for generations both orally and embodied in practice:

**General Rules**

- Only traditional cylindrical hives are allowed to be used at the apiary.
- One is free to set down hives in their own huts, or in other huts if given explicit permission to do so by the hut owners.

- It is forbidden to set down hives outside of the known nectar/bee foraging seasons.

### **Beekeeper Rules**

- Pre-conditions for a person harvesting the honey include:
  - They must be an upright person (be deemed to have good character) by Islamic standards.
  - They must not have any outstanding conflicts with community members.
- During the time of harvest, the person harvesting must:
  - Invoke the name of God (say '*bismillah*', i.e. in the name of Allah) before beginning.
  - Be dressed in white because it both keeps the bees calm and represents purity in Islam.
  - Be in a state of ritual purity as if one is about to pray, which means performing Islamic ablution (i.e. *wudu*) beforehand.

### **Respectful Etiquette Rules (and Expectations)**

- One is expected to give a portion of the first honey harvest of every season to the apiary guardian, which serves as his salary.
- One is expected to give honey or extra space to lay hives to community members if asked, just as reciprocity is an honored social norm.
- When harvesting, one is expected to:
  - Harvest only one hive at a time.
  - Only harvest between the third and fourth prayers of the day (which corresponds to the few hours leading up to sunset) since that is when the bees are believed to be calmest.
  - Not harvest too many hives or harvest outside of that time period.
  - Minimize disturbance to bees from the hive at hand and neighboring hives.

Categorically, these rules safeguard either 1) the wellbeing of the bees, 2) the rights of apiary colleagues, and/or 3) the Islamically sound status of beekeepers. The villagers believe that if they fail to uphold even one of these three imperatives, the *baraka* present within their apiary, and perhaps the apiary itself, would certainly fade away (along with their livelihoods). Because these prioritizations are all consciously and scrupulously rooted in Islam, *Taddaret Inzerki* forms a real-world conception of an Islamic indigenous cooperative.

This point becomes clear when examining even the first rule of the apiary: a ban on any other type of hives apart from the local traditional ones, and it exists for two reasons. First, by experience, the beekeepers of Inzerki find it significantly more challenging to work with bees residing in modern hives (which are square shaped, i.e. a lidded box) because they are more quickly distressed and agitated as opposed to the traditional cylindrical ones, where they find the bees to be calm and composed. Second, and what the beekeepers see as directly related, the quality and taste of the honey from traditional hives is believed to be fundamentally

better than that of boxes.<sup>5</sup> Notably, box hives a decade ago used to sell for ~€150 each and traditional ones for the equivalent of only a few Euros. Today, however, the Moroccan honey market is undergoing shifting consumer preferences towards the local and artisanal, e.g. most people prefer to (and indeed do) purchase honey straight from beekeepers, the honey’s floral origin and flavor being the two most important characteristics (Khaoula et al. 2019). Accordingly, box hives now sell for ~€100 and traditional ones for a minimum of €200.

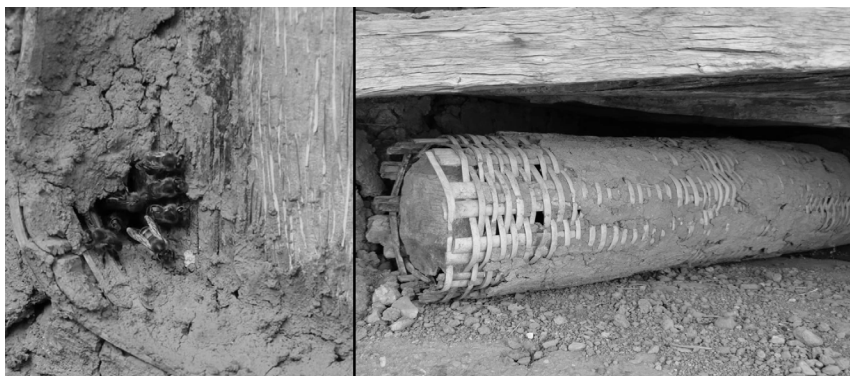


Figure 7: bees of Inzerki (left) and a traditional cylindrical hive (right)

The ban persists despite the fact that the beekeepers are fully aware of two significant advantages that come with utilizing box-based hives: an individual box can produce up to 40 kg of honey annually (and contains 60k bees), whereas a traditional cylindrical hive averages just 10 kg (and contains up to 30k bees); boxes can be stacked one on top of the other and are therefore easily transportable, whether along the supply chain or for the bees to have access to different nectars. The beekeepers of Inzerki made it clear that an institutional goal of their apiary is to specifically not compete at scale, i.e. produce the most amount of honey possible. Instead, they seek to preserve the reputation of *Taddaret Inzerki*, dating back to its genesis, namely, that beekeeping is a sacred craft in which the wellbeing of bees is regarded as paramount and, in doing so, ultimately produces high-quality, healing honey that is also believed to have *baraka*.

The apiary also does not practice any selective breeding of queen bees. Because the villagers regard bees as sacred, they believe it would be invasive and inappropriate to interfere with their reproductive process. Moreover, they believe in an almost Darwinian sense that if they let (Allah’s) nature run its course, the healthy and hearty queen bees and their offspring will be the ones to survive and flourish, and therefore the apiary will be resilient against the elements and pathogens.

Another salient example of the Islamic nature of the commons in Inzerki is the honey harvest. Work begins only when sunset draws near, since that is when the beekeepers find the bees to be most tranquil, and honey is delicately extracted from a single hive at a time up to a maximum of only 5-7 hives per day. This slow and almost meditative process is deliberate so as to minimize disturbance to the bees from the hive at hand as well as nearby hives. When first approaching a hive, beekeepers use a small amount of smoke produced from burning a mix of dried cow manure and the leaves of olive trees to calm the bees and make sure the beekeeper does not startle them. Throughout, a mix of crushed onions and water

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<sup>5</sup> The difference in quality between the two is also attributed to the traditional way of harvesting the honey, which uses a clay pot slow-drip technique that inevitably includes bits of the pollen with the honey.



is immediately sprayed on the bits of honey that inevitably fall during the process of honey extraction, so that the nearby bees do not violently swarm on the honey (a process locally known as *timingit*, Tamazight for ‘the assault of the bees’), which would otherwise occur and potentially agitate and attract thousands of bees. After extraction but before the traditional hive is used again, it is sterilized and purified by burning incense. The above practices are indicative of the profound respect the beekeepers of Inzerki have for both the bees and their traditional craft of beekeeping.



Figure 8: levels of the apiary with rows of terraced huts

### ***The Economics of the Indigenous Cooperative***

In terms of the livelihood of the beekeepers, those that were interviewed were unanimously aligned on the perspective that the apiary allows them the economic means to remain in Inzerki and avoid emigration. This is especially so considering that the only other potential source of income in the valley, other agricultural produce, is insufficient and would restrict or even damage the ecosystem of the bees – something they regarded as an entirely unacceptable outcome. At the time of writing, a single traditional hive at the apiary will produce, as was already stated, around 10 kg of honey, which sells for an average of 300 dirhams per kilogram (roughly €30), meaning that if a villager lays 20 hives annually (a very feasible amount), they can expect around €6,000 of annual income – which they are manifestly grateful for. By way of context, €2,900 and €8,700 are respectively the minimum annual wage and average public-sector annual wage in Morocco (Eliason 2019). The prevailing view is that although there are some issues where central-government (or other external) help is welcomed, which will be discussed below, the villagers are content living self-sufficiently through their indigenous cooperative.

It is therefore understandable why the perseverance and success of the apiary is regarded as

a vital part of their livelihood and even their overall identity. In fact, the villagers believe in the material and immaterial conservation and rejuvenation of their common natural resource that is the apiary. This explains why *Taddaret Inzerki* takes a strictly ‘B2C’ approach to the sale of its honey: by forgoing any intermediaries and selling directly to customers, the beekeepers feel that they can avoid any potential counterfeiting or foul play (e.g. mixing with other honey, dilution with sugar or syrups, etc.) and subsequently preserve the reputation of quality that their apiary is known for. Logistically, this requires the beekeepers to make, at minimum, a 15 km trek to the nearest paved road, where they link up with truck drivers heading towards particular cities in Morocco, and arrange delivery with individual customers mostly through social media.

The perseverance and success of the apiary will, on rare occasion, even prompt the villagers to seek external assistance. A notable example was their desire to address what they saw as an insufficient number of functioning boreholes and solar panels at the apiary. This occurred in the backdrop of the government’s decade-long Green Morocco Plan launched in 2008, with one of its core objectives being the development of local (rural) products, and eventually supported 720 domestic cooperatives (Agency for Agricultural Development 2022), including *Taddaret Inzerki*. The villagers wanted to be included in the initiative because they recognized that they were unequipped in terms of know-how and capital regarding the drilling of boreholes and the installation and maintenance of solar panels, which offered a low-impact (i.e. green) route to upgrading the water and energy infrastructure of the apiary. As such, they took the initiative to register *Taddaret Inzerki* as an official cooperative at their local council – a necessary step to receive support via the Green Morocco Plan. The villagers subsequently received funding and technical support from the Moroccan government (and in close collaboration, international NGOs), which had years of experience directly or indirectly implementing rural public-works projects utilizing recent, environmentally conscious, technologies.

### ***The Apiary, Recapitulated***

As is evident from the rules of the commons concerning the rights of apiary colleagues and the piety of individuals, the villagers of Inzerki are concerned not only with decorum vis-à-vis the bees, but also with others, as well as with the divine. The apiary is therefore not a strictly vocational association, but rather much more along the lines of an Althusian *collegium* that envelopes and manages social life, i.e. colleagues live and are ruled by it. Indeed, *Taddaret Inzerki* is a source of active character development and refinement, as well as a setter of social norms and customs (beyond beekeeping), regularly through its senior members and occasionally, although principally, through the regional Nasiri *Shuyūkh* and their prayers and guidance during annual festivals or impromptu visits.

The villagers are driven by the belief that upholding proper etiquette means one is being considerate to others and is respecting divine guidelines for human behavior – both of which are considered fundamental parts of being a good Muslim (even outside of the context of the apiary). Otherwise, if one is to remove the necessities of invoking the name of God, performing a ritual wash, and wearing white garments after making up with a neighbor from their Islamic context, it may appear as though the beekeepers have various idiosyncratic practices that are both trivial and rather inefficient to the production of honey. As all of the beekeepers

that were interviewed affirmed, however, these idiosyncratic practices are an inseparable and sacrosanct part of their indigenous craft of Islamic beekeeping. The status of Islam in *Taddaret Inzerki* is therefore as uncompromisingly paramount and central today as it was when the Nasiri *Shaykh* Sidi Muhammad gave his counsel and *baraka* five centuries ago.

## 5. Discussion: The Triple Benefit

“The final cause of politics is the enjoyment of a comfortable, useful, and happy life, and of the common welfare – that we may live with piety and honour a peaceful and quiet life, that ... true piety toward God and justice among the citizens may prevail at home” (Althusius 1995, 24).

The results of the ethnographic data collected suggest that the scope of decision-making power and responsibility devolved to *Taddaret Inzerki* is comprehensive, and that the villagers utilize this continued autonomy to run a centuries-old indigenous cooperative based on their local Islamic tradition. These findings indicate, preliminarily, that the devolution policy results in a triple-benefit: for the Moroccan state who implements it, the villagers who act upon it, and the globe who can learn from it.

### **The Moroccan State**

Apart from its inherent remoteness, the case illustrated that the Inzerki villagers and their apiary proved to be a strategically well-suited candidate for the Moroccan state’s devolution policy for two main reasons, both of which are of significant benefit. The first reason is the healthy interplay of local autonomy and state allegiance exhibited by *Taddaret Inzerki*, which is closely related to the nuances between devolution (which is focused on scale) and subsidiarity (which is focused on both scale and competence). To clarify, it was only because of the comprehensive transfer of responsibility and decision-making power over their own affairs (i.e. devolution) that the villagers were able to recognize the limits of their knowledge and expertise (e.g. in the case of upgrading water and energy infrastructure), and consciously turn to the state for support in a particular area that it has higher competency in (i.e. subsidiarity), which subsequently cements state legitimacy and authority. The case of *Taddaret Inzerki* suggests that the dynamic of a genuinely autonomous *collegium* that decides when, what, and how state support is appropriate – and by doing so implicitly recognizes the higher powers of the realm – is a positive one not only in Althusian, but also in Islamic terms.

The second reason as to why the apiary is a sensible choice for continued devolution relates to the manifest loyalty of the villagers to the head of the realm (in the Moroccan context: the king) as a principle of belief cultivated by the Nasiri *Zāwiya*. To be clear, all *zawāyā* in Morocco not only recognize the Alawite monarchy as legitimate, but ceremoniously pledge allegiance (*bay‘a*) to it and make regular public prayers (at least every Friday) for the king to be granted *baraka* (and by extension, the society he rules over; Chafik and Drechsler 2022). This ritualization of what Althusius describes as holding a ‘reverent attitude’ gives the Moroccan monarchy an indispensable amount of sacred soft power that not only legitimizes its rule but garners it support and popularity.

What is particularly noteworthy about the Nasiri *Zāwiya* is that it is one of Morocco’s most

prominent, with hundreds of branches in rural and urban areas and, at the headquarters *zāwiya*, one of the oldest and largest manuscript libraries in the maghreb – that was funded and supported, not coincidentally, by the Moroccan government. The Nasiriya are responsible for some of the most iconic manifestations of Moroccan Islam, e.g. the twice-daily *hizb* (1/60 section of the Qur’ān) group recitation done in every mosque in the country to this day, and Imam al-Dar’ī’s (d. 1674) *Prayer of the Oppressed*, which was recited so frequently and extensively throughout Morocco during the colonial period (adopted even by non-Nasiri *zawāyā*) that it helped inspire resistance to the French occupation (Ar-Radani 2014, 12). The benefit to the Moroccan government of having the allegiance of, and experiencing a ‘reverent attitude’ from, such a beloved *zāwiya* and its members, who are exemplar beekeepers and citizens, is quite evident.

### **The Villagers**

Although the numerous benefits of the devolution policy for the villagers of Inzerki were apparent throughout the case, one can emphasize the four most prominent. First, and most importantly, the villagers have sufficient autonomy to shape, administer, and preserve their centuries-old Islamic apiary as they see fit. Second, through the apiary, the villagers are able to reliably maintain a respectable (both in terms of income and dignity) livelihood in an area (and even country) where such an accomplishment remains elusive for many. Third, the Islamic apiary is literally known as the home (*taddaret*) of Inzerki, which highlights the real sense of shared local identity and overall social structure and harmony that is cultivated through it – positive signs of a functional *collegium*. Fourth, the conservation and enhancement of the local environment surrounding Inzerki, which is something the villagers value immensely in itself and with regards to the quality of their local life. This, of course, makes the villagers of Inzerki one more example in a long tradition of indigenous stewardship of natural resource commons (Gadjil et al. 1993), which brings us to the third, i.e. planetary, benefit.

### **The World**

In a techno-economic age driven by information and communications technology (Perez 2002), one of the *prima facie* more ironic insights revealed by the findings is that by pursuing an age-old local tradition of beekeeping, the apiary provides groundbreaking answers to various global challenges. Take for instance the well-established consumer preferences trend of preferring and even paying a considerable premium for products that are natural, organic, small-scale, artisanal, etc., or the increasing importance of concepts such as animal welfare, ESG (environmental, social, and corporate governance), and the triple bottom-line (profit, people, and planet) for businesses globally (for a Morocco-specific analysis, see Lambarraa-Lehnhardt et al. 2021). *Taddaret Inzerki* is not retroactively attempting to fit any of these standards or desired qualities into its practices, nor is the Moroccan government nudging or forcing it to get there through incentives or regulations (or the latest app), but rather, the apiary may already provide general principles – or at the very least perhaps a starting point – of how Islamic beekeeping can all at once generate high-quality honey, economically empower local populations, tread lightly (and even enhance) the environment, and compassionately sustain biodiversity. With regard to the latter in particular, the critical

role of healthy bee populations for ecosystems (and life as such) due to their role as pollinators is difficult to overstate, which makes, in the author's estimation, the successful model of the apiary a *globally* highly relevant and encouraging achievement.

## 6. Further Research

Before proposing directions for future research, the author acknowledges that at least two limitations exist with regards to the study's findings. The first relates to external validity: prior to generalizing or replicating any successes from *Taddaret Inzerki*, it is important to note that it required 1) an extant indigenous cooperative operating at the micro (village) level that is 2) deeply committed to a largely homogenous tradition of Moroccan Islam and 3) a realm (i.e. central state) that is stable and strong enough to trust the process and end result of devolution. It would therefore require further studies in other contexts before even getting close to (Islamic) paradigm-specific, let alone general, best practices. The second limitation concerns the punctuated nature of data collection (amidst the pandemic), even going beyond the usual issues of case studies based on stakeholder interviews within a somewhat immersive approach. Specifically, as the time horizon of the *in situ* ethnographic research was short (two months), the author was unable to observe and interview as many villagers as intended, nor attend the apiary's various festivals and honey-season rituals. However, to the author's knowledge, the present essay is the first contribution on *Taddaret Inzerki* to the English academic literature and, as such, can (hopefully) serve as an informative first take.

That being said, one can identify four broad areas of future research that are potentially fruitful and worth exploring through further empirical cases and theoretical analyses of the apiary itself, and similar institutions in Morocco and beyond. All four areas would require a decolonizing research approach, that is, not simply critiquing colonialism and its legacies (e.g. global Western academic hegemony), but "reimagining and bringing forward Indigenous epistemic approaches, philosophies and methodologies" (Smith 2021, xii).

### 1. Lessons for local devolution

The case of *Taddaret Inzerki* demonstrates that it may be possible to overcome one of the largest stumbling blocks to municipal-level devolution policies: working with what successful institutions are already present (whether indigenous or local) instead of creating new, ultimately unfamiliar, ones based on external principles. To do so, the first step for the state and its partners should be to identify, understand, and value local institutions and *their* principles. After all, "the basic unit of actual living together, the least imagined and most 'real' one, is the community in which one lives, and that is the municipality. To have a say in this community and about that community can easily be called the most basic idea of autonomy at all – today in the globalized world as much as it was already in the Middle Ages" (Drechsler 2013a, 163).

This raises another interesting topic of future study, which is the enduring relevance of Althusius, in particular his concept of the *collegium* in the larger taxonomy of societal institutions, not only for municipal devolution but, more broadly, as the basis for key contemporary concepts such as interactive (Torfing et al. 2012), network (Torfing 2005), collaborative (Ansell 2012),



cooperative (Valentinov 2004), polycentric (Ostrom 2010), and public value (O'Flynn 2021) governance. Carrying on the spirit of decolonizing research, which calls not for a blanket dismissal of Western theory and research, but for taking up and developing relevant parts of it from non-Eurocentric perspectives, values, and purposes (Archibald et al. 2019), *Taddaret Inzerki* demonstrated that Althusius's *collegium* is useful in understanding community-based governance and administration even within the Islamic paradigm. As we have seen, the apiary is much more than a group of professionals: it is an identity-generating cooperative that serves as the vehicle to the 'good life' and constitutes civil society itself for the villagers. Indeed, in a world of "globalization, ... multiculturalism, and migration, the municipality becomes the citizens' genuine home" – which is one of the reasons why municipal autonomy is often seen as problematic or even threatening from the nation state's perspective (Drechsler 2008, 140). Perhaps, then, one remedy to this inherent conflict is to further understand, and if possible extract lessons from, *Taddaret Inzerki* and similar *collegia* that in spite of (arguably, because of) municipal autonomy, maintain a symbiotic, mutually-beneficial relationship with the state. Potential examples of such *collegia* range from the Sienese *contrade* (Drechsler 2006), which are from a Western urban setting, to *pesantren* (Fawaid 2016), which operate in a rural (Islamic) Indonesian context.

Finally, one may argue that centuries of local autonomy are simply a function of Inzerki's remoteness and size, which combine to make it a truly peripheral location from a public administration perspective – in other words, a policy of devolution by apathy. However, the Moroccan government was not apathetic when it chose to actively include Inzerki in its national rural development agenda, grant the apiary cultural and ecological heritage status alongside several international bodies, and respond to the local request for support with upgrading the local water and energy infrastructure. While it is true that the village and its apiary are relatively minor in the broader domestic affairs of Morocco, and may be regarded by many (especially urban) Moroccans as antiquated – this is exactly why the case of *Taddaret Inzerki* is interesting, i.e. that an indigenous cooperative operating quietly and inconspicuously in the periphery for centuries is able to be reliably called upon to address the societal issues and demands of today. Discovering where and how similar institutions exist is surely an important agenda item for future research.

## **2. Observed principles of local-level Islamic Economics**

The findings on *Taddaret Inzerki*, although, again, not sufficient to theorize on Islamic Economics as such, do offer three general principles of a local-level economic structure inherently based on Islam, even if they share commonalities with other traditions. First, an unwavering emphasis on respecting the sanctity of a craft or livelihood. The Inzerki villagers have a strong sense of and live by certain Islamically-informed requirements and limits to their beekeeping activities, which keeps the actual craft intact despite clear economic incentives to change it. Therefore the not-very *homines economici* villagers demonstrate, in a Polanyian sense (1944), that profit is not the natural driving force of society but, rather, is embedded within (and subservient to) the culture, norms, and values of that particular society.

Second, economic livelihood is fundamentally linked to *baraka*. For the villagers, livelihood is believed to be ordained by God (*Ar-Razzāq* or 'The Provider' is one of the names of Allah), and as long as they are seeking to be on His path, the following is believed to be blessed

and continue: forage (various flora) for the bees, water supply (annual rainfall), seasonal harvests of honey, quality (i.e. taste and health benefits) of the honey, income from the honey, harmonious social relations, and the apiary itself. From such a perspective, disregarding bee welfare to maximize output (i.e. honey) or violating any other rule of their commons becomes not only sinful, but irrational, because of the prospect of removing *baraka* from all of the above. In essence, one's livelihood is a function of not only the labor they do, but ensuring that the labor, the nature of it, and its externalities, is divinely sanctioned. Or as Althusius put it: "May the supremely good and great God grant that while we dwell in this social life by his kindness, we may show ourselves pleasing to him and beneficial to our neighbour" (1995, 15).

Third, 'sustainable' is an upshot of (aiming to uphold) Islamic values, not the goal itself. The Inzerki villagers do not base their apiary on the worldview, however correct it may be, that a sustainability agenda is increasingly necessary as a consequence of late industrial capitalism threatening the planet's climate and biodiversity. Rather, the conservation of their natural resource commons in the form of an apiary is based on the worldview of Islamic stewardship – that creation, including nature, is not our possession but Allah's and must therefore be treated as a sacred responsibility. Once again, this is a key point to consider when designing devolution policies (especially in the context of natural resource management): instead of transporting an external, often secular, model of how and why sustainable practices should be achieved, one must first consider local or indigenous models that may ultimately result in sustainable (perhaps even regenerative) outcomes because of the broader set of ontological and theological views underlying them. To advance our understanding of such views within the Islamic context, *maqāsid* (higher objectives/purposes of Islam) is a particularly salient concept (see Auda 2007).

### **3. An Islamic Commons?**

The case illustrated that the way by which *Taddaret Inzerki* is structured and managed can be distilled into a set of rules of the commons, which reflect the villagers' understanding of (public) value. There have been recent, sensible calls for understanding the contextual nature of, and empowering communities to collectively self-determine, value, i.e. "value as a commons" (Kostakis and Pazaitis 2020). One interesting avenue of future research may be to discuss the notion that all value is contextual, that is, to explore whether there are not some paradigm-wide principles that determine value. Regarding a potential Islamic paradigm of the commons, the apiary hints at universal (e.g. wellbeing of bees) and contextual (e.g. whether or not to charge membership or usufruct fees) elements of value as a commons. As a broader starting point, there also exist various notions of service to (and with) community that are rooted in traditional Islamic scholarship, e.g. *khidma* (task or service for another), *amāna* (obligation or trust relating to both the tangible and intangible), and *maslaha* (public interest).

### **4. Understanding the impact of Islamic Beekeeping**

The largest area of potential fruitful research is likely the ecological: how do the practices and perspectives of the beekeepers stand up to our current scientific understanding? Take, for instance, the lack of selective breeding for queen bees. Currently the most common



reason for bee colony failure is poor queens, i.e. those that perish prematurely (within less than a year) instead of after the natural 3–4 year lifespan (Kulhanek et al. 2017). Indeed, the majority of queens in the US are selectively bred by a handful of companies, which “raises concerns about a lack of genetic diversity and the spread of certain diseases” (Amiri et al. 2017). Although none have any scientific training, the beekeepers of Inzerki firmly believe that the phenomenon of poor queens could be avoided if one falls back on local natural breeding of bees and give this advice to any visiting Moroccan, American, or European scientist or beekeeper involved with large-scale commercial industry. The push for this local-level type production of queens, known as ‘microbreeding’, is something that is indeed underway globally, but remains underexplored in the literature (Amiri et al. 2017), and therefore, it remains to be seen whether Inzerki’s beekeepers are indeed correct.

Apart from diseases, another topic where we have more questions than answers relates to the robustness of Inzerki’s bees vis-à-vis the elements. In the period of autumn to winter of 2021–22, Moroccan honey production saw a significant downtick due to the worst national drought in forty years, with many beekeepers across the country reporting failure of all their colonies and the Moroccan government responding with over €12 million in aid (*Le Monde* 2022). However *Taddaret Inzerki*, despite losing several hives over this period, is still in operation and expects healthy spring and early summer harvests. What accounts for the discrepancy? Could it be that the practices of the apiary have a casual effect on colony survival and overall health, and if so, which ones? One of the factors may be something as simple as utilizing only cylindrical hives. As we now know from modern apiology, the language of bees is through various forms of dance, all of which share a circular element (von Frisch 1993). Perhaps then, the communication of bees (and by extension their temperament and health) in box hives is suboptimal?

Despite these promising research questions, one important caveat is that there are certain aspects of Islamic beekeeping in Inzerki that are not amenable to investigation, but are instead sacred matters (pertaining to values and faith). For instance, although melittologists today can describe the intricate details of how the stinger’s detachment post-sting results in the honeybee dying from what is effectively an abdominal wound (for a popular science account, see Hanson 2018), the head beekeeper pointed out that the realm of ‘why’ is not readily answerable by the scientific method. He did put forth an Islamic explanation regarding why (of the bees that are capable of stinging) honeybees are the only type of bee to die after stinging: “if a bee could sting a person and simply move on and return to the routines of honey production, that honey would surely be contaminated with impurities and diseases – thus not being a source of healing”, referring back to the *supra* Qur’anic verses on honey bees. This anecdote reminds one of the inextricable knowledge–practice–belief structure often found in indigenous communities stewarding their local ecological systems and biodiversity (Gadgil et al. 1993) – and moreover, for the sake of both epistemic decolonization and successful natural resource management, the necessity of respecting and valuing the sacred elements within it.

## 7. Conclusion

Through *Taddaret Inzerki*, this essay investigated a case of devolution policy vis-à-vis an indigenous cooperative in the area of natural resource management. What is noteworthy

about the institutional priorities and practices of the apiary (i.e. the rules of their commons) which are Islamically based, is that there are built-in components that shape not only all aspects of the craft of beekeeping, but society itself in the small village of Inzerki. These findings demonstrate that this particular devolution policy is 1) insightful because it is actually successful and it emerged from the underexplored Islamic context, 2) beneficial to local, national, and global interests, and 3) (hopefully) encouraging as a starting point for a diverse set of future research themes and questions in public administration and beyond.

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# To Experiment or not to Experiment in Tax Policy?

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## Abstract

Despite the increasing use of experiments in policy-making the suitability of field experiments in the public sector context is still under debate. In this article, we focus on experimenting in the field of tax policy and ask: what are the promises and pitfalls of using experimental approaches in tax policy? While the existing discussions on tax policy experimentation focus on randomized controlled trials from a legal perspective, we adopt a broader view and provide a more comprehensive discussion by synthesizing insights from the fields of political science, public policy, public administration, and governance. Our analysis encompasses randomized controlled trials, non-randomized policy pilots and design experiments. We summarize the existing knowledge on using field experiments in policy-making and discuss the implications of the knowledge for experimenting in tax policy. We seek to offer a more holistic and critical take on whether we should promote the use of experimental approaches in this domain.

**Keywords:** policy experiments, tax policy, randomized controlled trials, policy pilots, design experiments

## 1. Introduction

Converging trajectories in various disciplines point to the increasing importance of using experimental approaches in policy-making (e.g. Ansell and Bartenberger 2016; John 2014; Ettelt et al. 2015a; Lee and Ma 2020; McFadgen and Huitema 2017; McGann et al. 2018). This has been aided by parallel developments in academia and practice. First, the term "experimentalist governance" has been used to describe developments in the European Union's approach to policy-making in various policy sectors (Rangoni and Zeitlin 2021). Second, the rise of the so-called "randomistas", who advocate the use of randomized controlled trials (RCTs) in development (as evidenced by Banerjee, Duflo and Kremer getting the Nobel prize in economics in 2019), has strongly influenced debates on development economics, with spillovers to other areas as well (e.g. Kvangraven 2020; Leao and Eyal 2019; Stein et al. 2021). Third, experimentalism has been embraced by behavioral economics and behavioral public policy (e.g. Jones and Whitehead 2018; Strassheim 2020). Fourth, the calls to integrate design thinking – which is also experimentalist in its logic – into policy-making have recently been made by a number of public policy scholars (e.g. Stoker and John 2009; McGann et al. 2018). In response to the pressures to be "smarter" and more "innovative", many governments have created nudge-type government units and public sector innovation labs that employ various



kinds of experimental methods (e.g. John 2014; McGann et al. 2018; Tönurist et al. 2017).

At the same time, the world is becoming increasingly uncertain and complex, warranting experimentation as a way to cope (Rangoni and Zeitlin 2021; Voß and Simons 2018). For example, the need to deal with climate change has precipitated an avalanche of sustainability experiments (e.g. Ansell and Bartenberger 2016; McFadgen and Huitema 2017, 2018 McFadgen 2019). Fast technological developments (especially in ICT) and their pervasive impacts on economic and social spheres have triggered extensive discussions on experimental legislation and regulation (e.g. Philipsen et al. 2021; Ranchordas 2013).

The suitability of experimenting in the public sector context is still under debate, especially with regard to specific policy fields. In this article, we focus on experimenting in the field of tax policy. More specifically, our research question is: What are the promises and pitfalls of using experimental approaches in tax policy? The focus has been inspired by various considerations. Tax policy entails the use of taxes for a number of purposes: generating revenue for the government, shaping the behavior of individuals, redistributing income, and stabilizing the economic cycle (e.g. Kay 1990). Given that *consistency* and *horizontal equity*<sup>1</sup> are considered to be the core values in this policy area, using experimental approaches – which by nature entail disruption and potentially differential treatment of citizens – is likely to be more controversial in tax policy than in many other policy fields. At the same time, it is a policy sector where the complex and rapidly evolving context (e.g. changing technology, globalization, challenges presented by climate change) gives rise to considerable new uncertainties. Experiments could be viewed as generating useful knowledge about the novel challenges and the best ways to address them (Rangoni and Zeitlin 2021). Given the importance of taxes in generating revenues for the state, getting tax reforms “right” has very high stakes (Werner and Riedl 2019).

Recently, rather bold proposals for making more extensive use of field experiments in tax policy have been put forward by Abramowicz (2019). While Abramowicz (2019) approached the issue from the legal perspective and focused specifically on the promises of *randomized* experiments, we adopt a broader view. We provide a comprehensive discussion about the suitability of policy experiments in the field of tax policy by synthesizing insights from the fields of political science, public policy, public administration, and governance. With regard to the different types of experiments, our analysis encompasses both randomized controlled trials and non-randomized policy pilots as well as design experiments. We summarize the existing knowledge on using experimental approaches and discuss the implications of the knowledge for experimenting in the field of tax policy. With that, we hope to offer a more holistic (and also a more critical) take on whether we should promote the use of experimental approaches in this domain.

It is worth emphasizing that in this article we focus on tax *policy* rather than tax *administration*. The use of field experiments to improve tax compliance (e.g. by using deterrence messages, referring to the tax behavior of others, increasing the moral costs of non-compliance in tax offices’ communication with taxpayers) has been extensively discussed in the existing studies (for useful overviews, see Hallsworth 2014; Mascagni 2018; Pomeranz and Vila-Belda 2019). Furthermore, our focus is not on whether *research* in public administration, public policy and political science should make (more) use of experimental methods (as discussed e.g. in Druckman et al. 2006; Stoker 2010). Instead, we are interested in whether *policy-makers*, in

<sup>1</sup> Consistency refers to taxing equivalent transactions in a similar way. Horizontal equity means that taxpayers who are in a similar position should face a similar tax burden (e.g. Elkins 2006; Musgrave 1990).

devising and improving policy measures in the tax policy domain, should make more extensive use of experimental approaches, as the current *Zeitgeist* seems to be prescribing. Also, our focus is on field experiments and not on laboratory experiments.<sup>2</sup>

The article is structured as follows. Section 2 explains what we mean by the term “policy experiment”. Sections 3 and 4 give an overview of the potential benefits and pitfalls of making more extensive use of experimental approaches in tax policy, respectively. While sections 3 and 4 focus on issues that are relevant for all experimental approaches (irrespective of the specific design choices), section 5 analyzes the specific promises and challenges presented by different types of designs. Section 6 concludes.

## 2. Definition of policy experiment

Policy experiment is a protean concept (Karvonen and van Heur 2014), and in the existing literature, various definitions have been offered (for overviews of these debates, see, e.g., Ansell and Bartenberger 2016; Bauknecht et al. 2020). In some disciplines (e.g. economics), the term “experiment” typically has a rather narrow meaning and refers to a randomized controlled trial (RCT) (Ansell and Bartenberger 2016; Burtless 1995; Werner and Riedl 2019). On the other extreme, any policy reform – like the reduction in the top marginal rates of the income tax in the US in the 1980s – has been labelled as an “experiment” (Burtless 1995; Druckman et al. 2006; Heldeweg 2015; Nair and Howlett 2016).

In this article, we opt for the middle ground. The definition of policy experiment we employ is as follows: it is a policy relevant test undertaken by government organization(s) to learn about the impacts of a new policy solution, which can be used as evidence for further policy decisions (Bravo-Biosca 2020, 195; Heldeweg 2015, 183; McFadgen and Huitema 2017, 1768; Nair and Howlett 2016, 69; Millo and Lezaun 2006, 179). In an experiment, a new policy solution is “tried out or tested in a restricted environment in terms of time, space, scope and/or actors”, but it is “intended to provide a proof of principle that subsequently could have the potential of wider societal relevance” (Heldeweg 2015, 183). Experiments are “temporary and reversible interventions without permanent policy consequences” (McFadgen and Huitema 2017, 1767).

We regard a policy experiment as “a process that generates learning through an explicit intention to test new ideas” (McFadgen and Huitema 2017, 1765). As Bravo-Biosca (2020, 195) explains, an experiment is “intentionally set up to learn”, has “a clearly structured learning strategy”, and generates “new information, evidence, or data”. Therefore, if a government just tries out something new, it does not amount to a policy experiment unless the systems and processes required to learn from it are also established. This includes a timeframe for checking results and deciding whether to continue the experiment, adjust it, discontinue or scale up (Bravo-Biosca 2020). In other words, we follow the understanding whereby policy experimentation does not entail “freewheeling trial and error or spontaneous policy diffusion” but is “purposeful and coordinated activity geared to producing novel policy options that are injected into official policymaking”, with the goal to scale them up, if successful (Heilmann 2008, 3).

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<sup>2</sup> Useful overviews of laboratory experiments that could be insightful for tax policy have been provided by Werner and Riedl (2019) and Alm and Malézieux (2021).



### 3. The promises and benefits of using experimental approaches

The advocates of the experimental turn posit that experimental approaches can improve the substantive quality of policies as well as the policy-making process. First, from the perspective of *policy content*, the key aspects that speak for experimentation are the complexity of the system policy-makers seek to influence and uncertainty about the impacts of an intervention (Ansell and Bartenberger 2016; Bauknecht et al. 2020; Bravo-Biosca 2020; Hughes et al. 2020; Lee and Ma 2020; Lee et al. 2009; Millo and Lezaun 2006; Nair and Howlett 2016; Voß and Simons 2018). Experimental approaches are considered especially useful for understanding complex systems where actors, institutions and policy continuously evolve and interact in various ways (Bravo-Biosca 2020) or are influenced by novel and disruptive technological developments (Bauknecht et al. 2020; Philippsen et al. 2021; Ranchordas 2013, 2015a, 2015b; Van Gestel and Van Dijck 2011).

Therefore, the key promise of policy experiments, regardless of the specific design, is to provide policy-makers with information that would otherwise not be available (Abramowicz 2008; Ettelt et al. 2015b; Millo and Lezaun 2006; Philippsen et al. 2021). Experiments allow policy-makers to test the effectiveness of a policy on a smaller scale, but in a real world setting, before it is rolled out on a larger scale (Bailey et al. 2017; Checkland et al. 2021; Farrelly 2008; Hughes et al. 2020; Lee et al. 2009; Philippsen et al. 2021; Ranchordas 2013). In addition to allowing the exploration of whether intended impacts materialize, experiments can offer information about unintended and adverse effects (Haynes et al. 2012; Hughes et al. 2020; Lee and Ma 2020; Nair and Howlett 2016; Philippsen et al. 2021; Ranchordas 2013), reduce informational asymmetries with regard to policy's acceptability for stakeholders (Nair and Howlett 2016; Philippsen et al. 2021), and alleviate uncertainty about how the target group behaves in response to different measures (Burtless 1995; Nair and Howlett 2016; Ranchordas 2013). Similarly, experiments can offer information regarding the impacts of different policy design options and help policy-makers choose between them (Bravo-Biosca 2020; Haynes et al. 2012; Hughes et al. 2020; Lee and Ma 2020; Nair and Howlett 2016). In the context of disruptive technological developments, experiments help to diminish the pacing and information gaps between technological innovations and legislation (Ranchordas 2013, 2015c).

These promises of experimenting reflect the information needs also in the field of tax policy. For example, if policy-makers were considering the use of tax credits for promoting the adoption of more environmentally sustainable investments and business practices by companies, an experiment could offer information about the degree of take-up of such incentives. Since taxpayers' perceptions of tax incentives can be distorted (Werner and Riedl 2019), it can be difficult to make linear predictions about their effects. Experiments can offer useful insights into how such incentives are actually perceived. With regard to choosing the best tax policy design, an experiment may allow policy-makers to compare the effects of tax credits, tax deductions and tax exemptions, and opt for the solution that is likely to have the largest impact on the adoption of environmentally sustainable practices. In assessing the effects of tax credits on the behavior of businesses, policy experimenters can examine whether the size of the tax credit makes a difference. Experiments could also be used for assessing which aspects of the policy are having the largest effect (Haynes et al. 2012). For example, if the government employs, in parallel, tax credits but also subsidies for promoting environmentally

sustainable investments, it may be interested in which instrument is responsible for driving the policy outcomes. In an era of disruptive technological developments, experiments can be useful for testing how to best tax digital nomads, digital transactions, digital data, carbon, or ecological footprints (Akdogan 2021; Shome 2021). In such instances, experiments also allow governments to test their own ability to impose taxes on novel phenomena (Millo and Lezaun 2006).

Second, from the perspective of *policy process*, experimentation can improve the quality of deliberations over policy. In uncertain situations, policy experimentation can help to build consensus and create space for political bargains by focusing policy-makers' attention on policy consequences and outcomes (Abramowicz 2008; McFadgen 2019; Millo and Lezaun 2006; Nair and Howlett 2016; Lee and Ma 2020; Ranchordas 2013, 2015a, 2015c). This can be particularly beneficial in tax policy, where the partisan debates tend to be polarized and more influenced by policy hunches (or even dogmas) and less by information about the actual impacts of different solutions (Abramowicz 2019). By presenting a possible future, experimenters can mitigate conflict in policy reforms that may otherwise be politically unpalatable (Bailey et al. 2017; Nair and Howlett 2016; Ranchordas 2013, 2015a, 2015c). Consensus on a policy, in turn, can potentially facilitate higher levels of compliance and, through that, increase policy effectiveness.

Furthermore, experimentation can be viewed as helping to lower the overall costs of policy (Abramowicz et al. 2010; Adkins and Ylöstalo 2018; Checkland et al. 2021; Farrelly 2008; Haynes et al. 2012; Hughes et al. 2020; Kvangraven 2020; Lee et al. 2009). Even though the running of experiments can entail data collection costs, such investments can pay off via allowing policy-makers to "weed out" programs that are not effective or avoid the costs of failure (Abramowicz et al. 2010; Bravo-Biosca 2020; Farrelly 2008; Haynes et al. 2012; Oakley 1998; Lee and Ma 2020; Lee et al. 2009). Experiments can also help to decide, in the context of limited resources, which policy options from a range of alternatives deliver the highest value and should be chosen over the others (Haynes et al. 2012). Given that changes in tax policy can entail considerable costs for the state budget (especially when they entail tax incentives), the financial considerations in opting for experiments can be particularly pertinent in the field.

#### **4. The challenges and constraints of using experimental approaches**

The more critical perspectives on using experiments in public policy point out several challenges and constraints. These derive from two sources – the problems inherent to experimental approaches and the political setting of public policies. Tax policy experiments are likely to be challenged by both.

There are challenges that are common to all types of policy experimentation, regardless of their specific design – whether they "slice" through space, time, scope or types of participants. For instance, an important challenge for all experiments is that due to their small scale, scope or limited duration they would not be able to capture some of the effects which could materialize when the same policy is offered at a large scale or over a longer period of time or in a different context (Bauknecht et al. 2020; Burtless 1995; Millo and Lezaun 2006; Werner and Riedl 2019). As Millo and Lezaun (2006, 181) put it, one can always point to "particular features of the world that the experiment failed to replicate". For example, in an experiment

that tests the impacts of tax credits for investments to lower the carbon footprint, if only a small fraction of businesses is enrolled, it may not be able to capture the kinds of peer-effects and isomorphic pressures that may emerge if the scheme applied to all businesses. Thus, in tax policy experiments, one should remain aware of the dangers of making “sweeping macro-level generalizations” by drawing on micro-level evidence (Stein et al. 2021, 64). Attribution of causality can be particularly challenging when “complex systems are involved in a difficult task” (Nair and Howlett 2016, 71). Thus, tax policy experiments would face challenges in assessing third-party effects (i.e. effects that go beyond the taxpayers themselves) and especially macroeconomic consequences of tax changes (Abramowicz 2019).

Furthermore, a key challenge for all experiments, including those in tax policy, is the Hawthorne effect, which occurs when individuals or businesses behave differently because they know that they are in an experiment (e.g. Levitt and List 2011). Also, if the participants know that the treatment is of limited duration, their reactions may be different from how they would react if the same policy was of enduring character (Burtless 1995). For example, taxpayers subject to an experiment may try to lower their tax payments by shifting their income and deductions from years in which they are subject to the experiment to years when the generally applicable tax rules apply to them or the other way around (Abramowicz 2019; Abramowicz et al. 2010). In such cases, a possible solution could be to have a longer time period for the experiment (spanning several years) (Abramowicz et al. 2010), which would limit the ability of individuals or companies to shift their income or expenses. However, the longer the experiment, the more serious the problem of attrition (Burtless 1995), which challenges the assessment of impacts. In addition to the Hawthorne effect, the results of an experiment may be influenced by spillovers to areas or individuals who were not supposed to be affected by the experiment. For example, if tax incentives for individuals or companies are offered in one jurisdiction (e.g. local government) and not in others, taxpayers may relocate to the experimental jurisdiction, which makes it difficult to compare the experimental jurisdiction with the non-experimental ones (Abramowicz 2008).

Next to the constraints related to the general nature of experiments, the *political setting* of public policies in a democratic context poses an additional range of challenges. The prevailing logics of political decision-making, policy and electoral cycles, electoral considerations, and value conflicts can render experimental approaches difficult for policy-makers to undertake (Bauknecht et al. 2020; Bravo-Biosca 2020; Burtless 1995; Voß and Simons 2018). The political setting entails four types of causes that contradict experimental logic and, consequently, may inhibit undertaking the experiments or shape their implementation.

The first challenge is related to the nature of politics per se. Politicians may reject policy experimentation as a general strategy if they regard it as a route for depoliticizing or de-democratizing policy decisions (Pearce and Raman 2014; Voß and Simons 2018; Strassheim 2020). Extensive literature about the obstacles to evidence-based policy-making has suggested that politicians often follow other logics than systematic evidence in adopting policy decisions. In a democratic system, competing societal values and preferences are translated into policy solutions (Kvangraven 2020). Thus, politicians may attribute higher importance to voter preferences, party agendas, and ideological considerations rather than to the kind of evidence that experiments promise to deliver. This is especially relevant for tax policy. Tax issues often constitute salient agenda points in electoral competition (Klitgaard

et al. 2015) and can define the core identity of some parties (Carmines et al. 2012; Ballard-Rosa et al. 2017; Osterloh and Debus 2012). As a result, tax policy issues may be regarded very ideologically and viewed as the core space in which ideological trade-offs (e.g. more state vs less state, equity vs freedom etc.) are struck (Carmines et al. 2012). This makes it particularly challenging to use experimental approaches in this domain. Driven by ideology, politicians may trust their gut feeling about the potential impacts of different tax policies – e.g. higher rates are “good” or “bad” and exemptions are “good” or “bad” depending on the ideological spectrum they are on – and hence do not feel the need to demand more rigorous evidence via experiments (Bravo-Biosca 2020). Politicians are likely to object to any tax experiments that they perceive to hurt their re-election chances (Bauknecht et al. 2020; Nair and Howlett 2016). Conversely, a tax policy option may be “so in tune with prevailing political values that subjecting it to tests is regarded by politicians as unnecessary or even unwelcome” (Pearce and Raman 2014, 393).

The second issue pertains to the need to avoid uncertainty. Beyond any ideological considerations, politicians may be concerned about how experimental decision-making as a policy-making style looks to the electorate. Experimentation may be problematic for politicians, since undertaking an experiment entails admitting uncertainty and lack of existing knowledge about the effects of policy interventions (Bauknecht et al. 2020; Farrelly 2008). Thus, if politicians were to opt for experimental tax policy at all, they may prefer to treat experiments as “demonstrations of effectiveness” or “justifications for decisions already taken” rather than answering open questions (Ettelt et al. 2015a, 294, 302; see also Zurbruggen and Lago 2019). These concerns may be reinforced by the culture of public sector organizations, which tend to be risk-averse and prefer stability, predictability and order, and exhibit limited tolerance of failure (Lewis et al. 2020; McGann et al. 2018; Zurbruggen and Lago 2019). The need to avoid uncertainty is likely to be particularly pronounced in case of a core state function like taxation. Instead of admitting uncertainty, elected representatives may prefer to be perceived as “decisive, energetic, and positive” (Farrelly 2008, 11) and emphasize “profound knowledge” about future developments (Bauknecht et al. 2020, 57). Experimenting strikes the kind of “chord of skepticism and indecision” that politicians seek to avoid (Peters 1998, 126) – even if the policy change in question entails using tax policy instruments in new technological spheres (e.g. taxing digital transactions) or changing societal context (e.g. digital nomads or platform work), all facing considerable uncertainties. Although the higher the uncertainty, the more learning opportunities experiments can offer, politicians may regard an open outcome as entailing a higher likelihood of failure – and this may be something they are motivated to avoid (Ettelt et al. 2015b; McFadgen and Huitema 2018).

The third issue concerns constrained timeframes. Some policy decisions may require immediate decisions, and hence policy-makers may not have the time needed for experimenting (Clarke and Craft 2019). For example, when tax policy is used for macroeconomic stabilization (i.e. cutting rates during recession and increasing them during a boom), timing is of pivotal importance and swift decisions crucial if undesirable lagged effects on the economic cycle are to be avoided. Furthermore, politicians may perceive that they are likely to be electorally rewarded for being swift rather than slow. As Stoker (2010, 53) explains, the demands of the experiment may clash with the policy cycles or political dynamics: “Experiments are a tool with a linear rhythm in a non-linear policy process and may as a result lose the battle for relevance by failing to produce results in a timely way.” There might be political pressure

to go fully ahead with the policy owing to its perceived benefits rather than waiting for the results of the experiment (Stoker 2010) or hasten the evaluation of the pilot, especially if the policy deals with pressing social problems (Nair and Howlett 2016). Especially in the case of longer-lasting experiments spanning several years (like the social experiments in the US in the 1960s and 1970s), the political agendas may change, rendering the findings less relevant for policymakers (Burtless 1995; Oakley 1998).

Fourth, there may be lacking capacities. Experimental policy-making requires various types of analytical and collaborative capabilities from the policy-makers, which may be lacking (Bedard and Ouimet 2012; Bravo-Biosca 2020; Stoker 2010). Lacking collaborative capabilities can become a crucial hurdle to policy experiments that involve a large number of different organizations and the engagement of public officials at several levels of government (Stoker 2010, 51; Cotterill and Richardson 2010, 157). While some simpler tax policy experiments may be relatively straightforward and just involve the finance ministry and tax office, others (e.g. on using tax incentives for fostering innovation or environmental sustainability) can involve a considerably larger number of bodies. Furthermore, objections to experiments may emerge from the broader public, and considerable communicative efforts may be needed to explain the social benefits of an experiment to gain public acceptance (Bauknecht et al. 2020) – especially in domains like tax policy where the public is likely to have deep-rooted expectations of horizontal equity.

## **5. Promises and pitfalls of specific experimental designs**

Policy experiments can take different forms. In this section, we will focus on the following designs: randomized controlled trials, non-randomized policy pilots, and design experiments. These are the main “ideal types” of experiments that have been discussed in the experimental policy-making literature. They follow different logics and hence entail different benefits and challenges from the perspective of tax policy. While sections 3 and 4 outlined the benefits and challenges that are common to *all* experimental approaches in tax policy, in this section, we zoom in on the promises and pitfalls of these three specific designs.

### **5.1. Randomized controlled trials**

Randomized controlled trials (RCT) hold the promise of allowing the experimenters to draw valid *causal conclusions* about the effects of a project, program or policy (Bravo-Biosca 2020; Burtless 1995; Cook 2002; Dalziel 2018; Ettelt and Mays 2015; Haynes et al. 2012; Pearce and Raman 2014). The random division of subjects into experimental and control groups can be expected to eliminate systematic differences between them and create equivalent groups, which are then subjected to different treatments (in the simplest design, intervention for the experimental group and nothing for the control group) (Burtless 1995; Cook 2002; Ettelt and Mays 2015; Farrelly 2008; Pearce and Raman 2012). In such a design, any observed differences between the groups are attributed to the “treatment” (i.e. the tested policy, program or project), assuming that the experimental group and control group operate in the same policy, social and economic environment (Bell and Peck 2016; Cook 2002). An RCT is expected to create a credible counterfactual (in the form of a control group), and this should enable



policy actors to assess the average treatment effect of the intervention (Bedard and Ouimet 2012; Bravo-Biosca 2020; Burtless 1995; Farrelly 2008; Haynes et al. 2012).

An RCT is widely regarded as “a gold standard method for measuring whether or not a particular intervention works better than doing something else or doing nothing” (Cotterill and Richardson 2010, 156). Given the uncertainties involved in many tax policy measures, RCTs could, in principle, offer opportunities to shed light on these questions in a systematic way.<sup>3</sup> An RCT could be used to assess the additional value (Bravo-Biosca 2020) generated by tax incentives, for example. It could offer the opportunity to test the assumptions or intuitions policy-makers have about a new tax deduction or exemption in terms of their behavioral effects or a new tax on previously untaxed objects or activities. As Haynes et al. (2012) emphasize, the untested intuitions of policy-makers may be wrong, even with policies that should be “guaranteed” to work.

Despite being regarded as the “gold standard” for causal inference (Bravo-Biosca 2020; Strassheim 2020; Webber and Prouse 2018), we should be aware of the dangers inherent in such “methodological triumphalism” (Barrett and Carter 2010, 516) and also pay attention to the key challenges of RCTs. RCTs suffer from major shortcomings – in light of which one could claim that, despite the glitter of recent Nobel prizes, it is “of baser metal than gold” (Barrett and Carter 2010, 516). Indeed, these may be the reasons behind the fact that although “tax law is a promising field in which the government might run randomized experiments”, existing experiments only entail tax compliance and welfare (i.e. negative income tax experiments) rather than tax policy more broadly (Abramowicz 2019, 68). In the following, we will discuss the challenges of RCTs.

The RCT design works well under three assumptions: 1) the intervention has to be clearly delineated; 2) the expected outcomes of the intervention have to be measurable and identified in advance of the experiment, and 3) the causal mechanisms examined should be relatively simple (Bedecarrats et al. 2019; Jones and Whitehead 2018). Although such a setup allows for valid statistical conclusions about the average treatment effect (Dalziel 2018; de Leao and Eyal 2019; Kvangraven 2020), it also imposes considerable limitations on what kinds of policies we can test with such a design (Bedecarrats et al. 2019). All of these aspects may pose challenges for using RCTs in tax policy experimentation.

First, RCTs rely on a definition of policy as an “intervention” while actual conceptions of policy are usually more diffuse (Ettelt and Mays 2015, 380). Some aspects of tax policy – e.g. marginal tax rates – can be easily operationalized and quantified for the purposes of an RCT. For example, policy makers may test with an RCT whether lower tax rates for hiring disadvantaged workers have the intended effect. However, many other tax policy domains may be more diffuse. Tax policies, like most other policies, are often constituted by configurations of interacting activity setting, events, and technologies rather than by discrete interventions (Anderson 1975; Ettelt and Mays 2015). As Anderson (1975, 17–18) explains, even in a relatively straightforward negative income tax experiment<sup>4</sup>, the “policy treatment” would be characterized by a host of variables such as rules for family size, what counts as a household, household benefits from other sources, accounting periods, and how windfall income is treated. All these are likely to affect the costs of the policy and its efficiency.

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<sup>3</sup> Indeed, some of the “classic” RCTs during the era of social experiments (1960–1980) in the US used the tax system as a policy instrument – most famously the experiments on negative income taxes (Burtless 1995; Oakley 1998).

<sup>4</sup> Negative income tax means that the government sends money back to taxpayers whose income falls below a certain threshold (Moffitt 2003).

Second, RCTs are suitable when policy outcomes are easily measured but challenging when they are fuzzy (Bedecarrats et al. 2019; Bravo-Biosca 2020; de Leao and Eyal 2019). Thus, in the case of broad-aim tax policies, which entail wider societal impacts, general equilibrium effects or changes in economy-wide aggregates, the use of RCT would be difficult (Bedecarrats et al. 2019; Burtless 1995; Deaton 2010; Strassheim 2020). As Burtless (1995, 77) explains, a negative income tax experiment, for example, would be able to capture the effects on labor supply, but without knowing how the employers would alter the wages, it would be impossible to “forecast the full general equilibrium effect”.

Furthermore, RCTs work well for assessing *average* effects but are challenging when the policy outcomes are skewed – e.g. when most projects fail and extreme successes are rare, as could be the case in tax-incentivized investment projects (Bravo-Biosca 2020; Bedecarrats et al. 2019; Deaton 2010). For instance, the take-up of tax credits for environmentally sustainable investments may be influenced by exceptional managerial capabilities (a characteristic that is difficult to measure), and this can introduce inaccuracies when estimating the average effect (Dalziel 2018). Similar objections are likely to be present in other tax policy measures that entail high variability in the target group. There might be considerable heterogeneity in how different groups respond to the tax policy treatment (Werner and Riedl 2019) and hence the average effect may conceal the fact that some groups are responding strongly and others are not. Furthermore, while some of the questions in tax policy may zoom in on *average* treatment effects, most of the issues policy-makers might be interested in concern *conditional* effects (e.g. the effects of tax incentives on the most innovative companies or the effects of tax credits on the poorest families). Policy-makers may also be interested in the *distribution* of positive and negative effects in different societal groups or types of firms, rather than just the aggregate average effect (Barrett and Carter 2010; Bedecarrats et al. 2019; Deaton 2010).

Third, “randomized experiments are best when a causal question is simple, sharply focused and easily justified” (Cook 2002, 179). If the policy intervention is targeted at a complicated phenomenon with a complex ecosystem (including unobserved interactions and linkages) it may be difficult to predict the impacts (Bravo-Biosca 2020; Bedecarrats et al. 2019). This is likely to be the case in experimenting with new forms of taxes on digital transactions or carbon footprints, for example. Also, those aspects of tax policy that seek to affect overall macroeconomic outcomes (e.g. stimulating the economy via lowering tax rates) depend on collective actions and interactions – and this clearly undermines the case of using RCTs for studying them.

RCTs are also challenging when the causal processes through which policies affect outcomes take a *long time* (Bravo-Biosca 2020). For reasons of cost and attrition, RCTs tend to be short in duration, which means that in reality only mid-point measurements rather than final indicators can be captured as outcomes (Bedecarrats et al. 2019; Farrelly 2008). Furthermore, the longer the time span of the experiment, the higher the likelihood that other factors besides the intervention start influencing the outcome(s) (de Leao and Eyal 2019; Farrelly 2008). For example, the effects of tax credits for investing in environmentally sustainable technologies may take a long time to materialize, and short-term evaluation may present an inaccurate picture of the eventual effects.

In addition to the aforementioned challenges, the design feature of using *randomization* can pose considerable obstacles to tax policy experiments. In the field of tax policy, randomization



may be difficult to justify ethically, politically, and legally.

*Ethically*, it may be difficult to argue why a policy measure should be denied to some potential recipients who would benefit from it (Bravo-Biosca 2020; Burtless 1995; Jones and Whitehead 2018; Pearce and Raman 2014). For example, if some companies have the opportunity to make use of tax credits for environmentally sustainable investments and others do not, this may be seen as unfair. Furthermore, randomization inherent in RCTs is especially likely to give rise to ethical objections when the experiment involves target groups that are vulnerable (Cotterill and Richardson 2010; Cook 2002). This may make it challenging, for example, to use an RCT to test the effects of giving tax incentives to employers for hiring disadvantaged workers.<sup>5</sup>

*Politically*, randomization may be difficult to justify to the wider public (Nair and Howlett 2016; Strassheim 2020). Policymakers may be concerned about whether it is fair for some people to receive help or benefits and others not if the experiment uses public resources (Nair and Howlett 2016; Strassheim 2020). It may be even more difficult for politicians to impose additional tax burdens on some individuals and businesses but not on others. For example, if the government wanted to try out a car tax on a smaller scale (e.g. applying it to randomly selected car owners) before implementing it on a large scale, in order to examine how it influences people's consumption choices, it may be next to impossible to justify it politically. Similarly, trying out the effects of a carbon tax (e.g. on the investment capacity of firms) in certain parts of the country before extending it to the whole country may run into similar difficulties. If randomization is difficult to justify, policy-makers are likely to fear negative public backlash to the trials (Bravo-Biosca 2020; Strassheim 2020) – and in the domain of tax policy, with clearly measurable costs and benefits, voters might be perceived to be particularly sensitive with regard to being treated unfairly.

*Legally*, challenges may arise from treating people differently when they should be treated equally (Adkins and Ylöstalo 2018; Burtless 1995; de Leao and Eyal 2019), especially if the intervention concerns rights or obligations of citizens (Abramowicz et al. 2010; Burtless 1995). In tax law, as Abramowicz (2019, 69) argues, the main hurdle to RCTs is the "core value of horizontal equity", which leads to "concerns that experiments necessarily produce unequal treatment of similarly situated individuals." However, Abramowicz (2019) argues that there might still be ample room for tax policy experiments where randomization could be legally justified with the fact that the experiment is revenue neutral. Revenue neutrality means that the "treatment group in such an experiment on average pays taxes as high as the control group" (70). In particular, such revenue-neutral designs would be suitable for assessing which combinations of tax deductions and tax rates would be most efficient (from the point of view of allocative efficiency). For example, if the current tax system entails specific deductions but higher (marginal) rates, policy-makers may want to test, with an RCT, whether taxpayers could in fact be better off with abolished (or reduced) deductions but lower rates. For instance, a government could undertake an experiment on abolishing entertainment deductions for businesses: businesses participating in the experiment would give up these deductions but face lower overall tax rates. Conversely, if the current system offers no deductions but lower marginal tax rates, policy-makers may want to experiment with offering deductions, combined

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5 A solution proposed to make randomization more palatable to the public is in framing the experiment as "a lottery". For example, in an RCT that has the potential to yield valuable insights in the effects of different marginal tax rates on incentives to work or for entrepreneurship, it may be very difficult to justify to the public why some households are subjected to higher tax rates than others. Abramowicz et al. (2010, 999) suggest a solution according to which the government announces that it "is sponsoring a lottery, the winners of which receive a reduction in their tax rates".

with higher tax rates. Abramowicz (2019) suggests that in addition to small changes to tax systems (e.g. the effects of adding or removing deductions), revenue neutral randomized experiments could be used to test also more significant changes – for example replacing corporate income taxes with government equity in corporations’ stock.

## **5.2. Non-randomized policy pilots**

Given the numerous challenges involved in RCTs, they may often not be feasible options for experimental tax policy. In that light, non-randomized policy pilots may offer an alternative route. A policy pilot seeks to test out a new policy approach in a confined setting, and/or on a small subset of the population or jurisdictions, and allows the introduction of a policy in a phase-wise manner (Bailey et al. 2017; Farrelly 2008; Ko and Shin 2017; Nair and Howlett 2016). Unlike RCTs, they do *not* entail randomization, although they may include comparisons with a control group (Philipsen et al. 2021). In order to be viewed as experiments, however, pilots should entail the establishment of concrete systems or processes to learn from them (e.g. Ko and Shin 2017; Lee et al. 2009; Philipsen et al. 2021).

Pilots enable policymakers to assess and adjust a solution before rolling it out nationally (Ko and Shin 2017; Nair and Howlett 2016). For example, a government may be interested in whether tax exemptions applied to cooperation agreements between universities and companies (e.g. creation of industrial professorships) or reducing the payroll tax of high-level researchers working at companies could facilitate the commercialization of basic research. Such exemptions may be first tested with some universities and companies before applying them to all. Special tax regimes for inbound workers could first be offered in some regions of the country to test whether this could be a useful instrument for regional development. In the EU context, tax policy pilots can also take the form of testing different tax solutions in the member states.<sup>6</sup>

Furthermore, owing to their small scale, pilots can foster policy innovations and aid the development of new policy designs (Nair and Howlett 2016). Policy pilots can also facilitate learning how to overcome implementation barriers and improve processes (Ettelt et al. 2015b; Ko and Shin 2017), which might be crucial in the case of taxing novel phenomena. In addition, pilots can catalyze the adoption of policy innovation through *demonstrating* how a new policy can be implemented successfully (Checkland et al. 2021; Ettelt et al. 2015b; Hughes et al. 2020).

Compared to RCTs, which require clearly defined input-output-mechanisms, non-randomized tax policy pilots may be more flexible in their setup and allow a more holistic assessment of a new measure. Also, RCTs tend to take longer time and hence policy-makers may prefer to undertake simpler policy pilots in order to get the information faster (and in line with the electoral cycles) (Ko and Shin 2017), which may be an important advantage in tax policy. There are, however, a number of challenges faced by non-randomized policy pilots.

First, in contrast to RCTs, the causal claims would be significantly weaker since we do not know “how the targeted population would have fared in the absence of treatment” (Farrelly 2008,

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<sup>6</sup> For example, Directive 1999/85/EC foresaw the possibility for member states to apply a reduced VAT rate on labor-intensive services to create jobs. The evaluation of the experiment by the Commission in 2003 revealed that the reduced tax rates were not translated into lower consumer prices and no clear impact on employment rates could be identified. Thus, it was concluded that “such measures were usually not very effective and the cost to the budget was high in relation to any impact the measures might have on the economy” (Van Gestel and Van Dijk 2011, 545).

8). Effects can be difficult to assess because "there may be alternative explanations for any observed changes" (Abramowicz 2008, 34). This means that in a politically contested policy domain like taxation, the findings of non-randomized pilots can be more easily attacked by political actors who are not pleased by the results of the pilot. Since there is no randomized control, policy makers cannot be confident whether in a policy pilot tax revenues have fallen because of the piloted measure or due to exogenous reasons, such as economic recession (Abramowicz 2019).

Second, replicating the success of a policy pilot may be challenged by differences in context (van der Heijden 2018; Farrelly 2008). The findings of policy pilots are likely to be influenced by various interdependent social, political, and economic factors, and this limits external validity. The groups, organizations or regions analyzed in a pilot may be systematically different from the rest of the population (Bailey et al. 2017). Furthermore, participants in the pilot may be motivated to ensure success and have incentives that may not be shared by the broader population (van der Heijden 2018). Van der Heijden (2018, 1385) refers to a frontrunner paradox, as experiments often "look for actors who want to be actively involved in solving a problem, who do not mind deviating from routines, and who are willing to take risks." These attitudes may not be characteristic to a broader population or a larger set of organizations, making scaling up challenging. For example, regions involved in a pilot testing a new tax regime for inbound workers may be particularly motivated to use that measure for promoting economic development and engage in extensive communicative efforts in spreading knowledge about that option.

Third, due to the limited geographical scope of policy pilots, spillovers to or from other regions may constitute an important challenge, especially in tax policy, where the incentives to move across jurisdictional boundaries are likely to be significant. As economic activity can move across jurisdictions, firms may shift its activities from a more highly taxed pilot location to one with a lower tax or the other way around (Abramowicz 2019), posing considerable challenges in making accurate assessments of the actual effects of the pilot.

Fourth, similarly to RCTs, an important question tax policy pilots have to wrestle with is the question of meaningful duration. If the designated time period is too short, we may not be able to capture the full impacts of the tested policy. Ranchordas (2015a, 912) suggests that this can be pertinent in experimental tax legislation that seeks to stimulate investment in renewable energy and advance clean-energy innovation. Since it takes a long time to develop a wind farm, for example, uncertainty with regard to the renewal of such tax credits can undermine long-term investment.

Finally, analogously to RCTs, tax policy pilots may give rise to ethical, legal and political challenges (Bauknecht 2019; Van Gestel and Van Dijck 2011). For example, offering a special tax regime in some geographical jurisdictions or to some organizations may be seen as violating the principles of horizontal equity, equal treatment and legal certainty (Huitema et al. 2018; Philipsen et al. 2021). However, it may be more feasible to use objectively defined and politically justifiable criteria for picking the subjects in a tax experiment in a non-randomized rather than a randomized way. For example, offering preferential tax regimes first to the least developed geographic regions or offering tax exemptions to the most promising cooperation networks of universities and businesses may be more palatable to politicians and the electorate than randomization.

### **5.3. Design experiments**

In a design experiment, "a solution concept (an idea, design, program, project, and so on) to a particular problem is created, and iteratively refined based on continuous feedback from stakeholders immersed in the experiment" (Zurbriggen and Lago 2019, 440). Design experiments draw on design thinking that emphasizes the importance of systems thinking, user centricism, regular iteration, and creativity (Clarke and Craft 2019, 6). Such an experiment adopts a "probe and learn" strategy, in order to understand the intervention (Ansell and Bartenberger 2016, 68) and to "re-specify and re-calibrate" the solution until it works (Stoker and John 2009, 358). Thus, the experiment would progress through iterative cycles of design, real-world testing and redesign based on lessons from earlier iterations (Stoker and John 2009, 256; van der Heijden and Hong 2021, 1119). Design experiments are less concerned with exploring causality than with manipulating an intervention in order to reach an acceptable outcome (Stoker and John 2009). Unlike in RCTs where policy experimenters can remain detached from the context, design experiments entail immersion in "thickly experiential policy contexts" (Lewis et al. 2020, 116).

A key feature of design experiments is taking into account the experiences of the persons affected by the issue. Design experiments assume that in order to address societal (especially wicked) problems, expertise from both professionals and members of the public are needed as their perceptions of the problems may diverge (Einfeld and Blomkamp 2021; Lewis et al. 2020). Hence, diversifying the sources of knowledge through the experiment can help policy-makers better understand and predict people's needs, perceptions and behaviors in real-life contexts (Clarke and Craft 2019; Einfeld and Blomkamp 2021; Lewis et al. 2020). In addition to refining policy solutions, stakeholders or end-users may also be involved in defining the policy *goals* and generating ideas for solutions (Clarke and Craft 2019; Einfeld and Blomkamp 2021; Lewis et al. 2020).

Design experiments share similarities with explorative pilots that are controlled only to a limited extent (Ansell and Bartenberger 2016). What makes the design experiments different is their explicitly *iterative* character. Thus, design experiments may provide dynamic and timely ways to change course during the experimentation process, therefore making them suitable for developing solutions for uncertain environments and complex problems. In tax policy, however, it is difficult to conceive of subjecting the stakeholders to varying tax rates, deductions, or exemptions in an iterative way. Given the importance of stable tax horizons in the investment and other decisions of individuals and businesses, such continuous changes and tweaks in the tax regime would be challenging.

Nevertheless, design experiments and the possibilities for iterative adjustments could be of value for developing novel tax policy solutions. For example, before introducing new taxes to quickly changing domains, the flexibility of the approach and insights from the stakeholders (Einfeld and Blomkamp 2021; Stoker and John 2009) may be crucial for the policymakers in assessing the feasibility of such taxes. As design experiments often seek to create prototypes and collect feedback on the potential responses to these policy measures (Clarke and Craft 2019; Einfeld and Blomkamp 2021), they could provide valuable insights about how the potential taxpayers, if they were subjected to such models, would react and adjust their behavior (Stoker and John 2009).

While RCTs require policy-makers to identify clear expectations about measurable impacts in order to commence the experiment, design experiments tend to have a "fuzzy front end", which allows for the "exploration of open-ended questions" (Clarke and Craft 2019, 9). That can be valuable in utilizing stakeholders' knowledge for making use of the tax system in solving new societal problems. By offering opportunities to test new approaches in an iterative way, design experiments offer a safe space for trying out novel solutions, reducing the fear of failure and hence promote innovation in policy design (Clarke and Craft 2019; Stoker and John 2009). Furthermore, by emphasizing the lived experiences of those affected by a policy design, such experiments can cater to the need to adapt the policy to different target populations as opposed to settling on a one-size-fits all approach (Clarke and Craft 2019, 7). Design experiments could be utilized in testing how potential tax payers would perceive information about new tax incentives before these changes are rolled out. The way tax incentives are presented can play a crucial role in how they are perceived by the taxpayers, and this, in turn can affect their potential tax behavior in the future (Werner and Riedl 2019). Complex tax regimes in particular can lead to weaker behavioral adjustments than expected by policy makers (e.g. Abeler and Jäger 2015). Design experiments can hence serve to assess the perceived complexity of a tax regime and help to mitigate potential distortions in the perception of the tax policy change.

In sum, design experiments could be valuable in understanding the reactions and opinions of policy target groups or developing new technological solutions that presume high inclusion of stakeholders in order to reach desired outcomes of tax policy. Nevertheless, design experiments also do face some crucial challenges in tax policy experimentation.

First, as continuous feedback and quick path adjustment is crucial during design experiments, they are not suitable in situations where effects of the action take a long time to appear or when there is a lack of control in different phases of experiment.

Second, design experiments tend to be applicable to small-scale policy issues rather than large-scale ones: they tend to be employed for "discrete service redesign projects" and in "exploratory work of scoping problems", rather than for the development of broader policy proposals or systemic reforms (Lewis et al. 2020, 113-114). It would be difficult to use them for assessing macroeconomic outcomes as the scope and intensity of design experiments (entailing immersion of experimenters and stakeholders) necessarily means a limited number of data points and the need to stay at the micro level.

Third, while the notions of "user centrism" inherent in design experiments may work well in the private sector context (where design thinking originates from), they may clash with the notions of rights and obligations of citizens, which prevail in tax policy. The stakeholders whose feedback is collected during the experiment may view taxes from their own narrow material point of view (with the goal to minimize their own tax burden), which may clash with broader policy goals. As Clarke and Craft (2019, 14) emphasize, user centrism may not be an easily applicable principle for contentious policy design choices, which include a broad range of users with conflicting needs and expectations, and thus require trade-offs between different values. The act of weighing these needs in tax policy is inherently political, subjective, normative, and ultimately falls to the accountable elected officials.



## Conclusion

In light of the growing importance of experimental approaches in public policy, we proposed a binary question in the title of this article: to experiment or not to experiment in the field of tax policy? As the discussion above shows, the answer to that question is much more nuanced than a simple "yes" or "no". Although Abramowicz (2019) in his thought-provoking study advocated an extensive use of randomized experimentation in tax policy, our claims are considerably more cautious. Using experiments in tax policy does have a range of promises but also a wide spectrum of pitfalls.

On the one hand, experimental approaches have the potential to increase both the substantive quality of tax policy and the policy-making process. Experimental tax policy can potentially help policy makers alleviate some of the uncertainties and information asymmetries with regard to the actual impacts of new tax policy measures, avoid adverse effects, build consensus, and foster attention to consequences rather than ideological hunches in tax policy debates. On the other hand, however, tax policy experiments may give rise to ethical, legal and political challenges. Most of all, experimenting may be seen to violate the principles of horizontal equity, equal treatment and legal certainty. Tax policy is a field characterized by contentious policy choices, which engage a broad range of stakeholders with conflicting perceptions and needs. The act of balancing these perceptions is inherently complex, political and demands trade-offs between different value considerations. Altogether, the application of experimental approaches in the field of tax policy can be characterized by two core challenges that experimenters need to acknowledge and address. We label them a political challenge and a methodological challenge.

First, experimenting in tax policy may clash starkly – perhaps even more so than in many other policy fields – with the political nature of democratic decision-making. Most importantly, tax policy questions are likely to be profoundly influenced by the ideological leanings of policy makers and even define the core identity of some parties, which makes it challenging to test tax policy questions in a genuinely open way. Also, given that experimenting in tax policy would often entail materially benefitting or burdening (in a very clearly measurable way) some groups of taxpayers at the expense of others, such experiments may be more vulnerable than experiments in many other domains to legal challenges. Despite the main promise of experimental approaches to provide new knowledge in complex environments where various actors, institutions and technologies interact, the low tolerance of the tax policy field towards uncertainty and unpredictability may render the experimental approaches politically, ethically or legally unfeasible.

Second, methodologically, different experimental designs entail different strengths and promises, and there is no universal recipe to follow. The experimenters need to decide whether to prioritize causal explanations facilitated by RCTs or exploratory and collaborative aims fostered by other designs. While RCTs enable stronger causal conclusions, non-randomized pilots allow the testing of more holistic policy solutions, and design experiments offer more open-ended approaches and a stronger focus on stakeholder experience. Randomization inherent in RCTs might be a particularly challenging "political sell" in the field of tax policy, since it concerns the core rights and obligations of citizens. Both RCTs and policy pilots could face the accusations of violating horizontal equity – a key principle in tax policy. The user-centrism inherent in design experiments may clash with the notions of taxes as obligations.

Although we discussed the various designs as distinct options, the lines between them can in reality be somewhat blurred, and they could be used in a sequential manner (Bravo-Biosca 2020; Pomeranz and Vila-Belda 2019). For example, a design experiment could first help take a fresh look at some tax policy goals, followed by a simple non-randomized policy pilot that tests variants of a solution offered in an exploratory way, and an RCT could then zoom in on specific causal questions. Our recommendation is that policy-makers should remain open to a diversity of possible designs of experiments in tax policy. In particular, they should be aware of the dangers of conceiving of experimentation very narrowly, only in terms of RCTs – which seems to be the default given the tendency of the evidence-based policy-making movement to regard RCTs as the “gold standard” (Adkins and Ylöstalo 2018; Barrett and Carter 2010; Bedecarrats et al. 2019; Dalziel 2018; de Leao and Eyal 2019; Pearce and Raman 2014; Strassheim 2020).

In sum, there are considerable constraints for the scope of tax policy experimentation. Thus, while in some disciplines and perhaps even policy-fields experimentation could be the prominent *Zeitgeist*, in tax policy it is likely to remain on the margins. We conclude that in the field of tax policy, experimentation could be feasible in carefully crafted revenue neutral experiments, in phase-wise introductions of larger programs where limited resources can offer a justifiable reasoning for benefitting some taxpayers before others, and fostering stakeholder discussions in very new tax policy domains.

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# The Urban Management of Secondary Raw Materials in the Light of Commons Theory: Circular Economy in Action<sup>1</sup>

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## Abstract

This paper intends to verify to what extent the theory of the commons and, in particular, the theory of shared administration can give useful suggestions in dealing with the problems of managing secondary raw materials, in a perspective compatible to the paradigm of circular economy. To this end, the discussion will be divided into three parts. First, the evolution of the regulatory framework for by-products will be analyzed in order to identify whether there is room for bottom-up mechanisms of by-product care. Second, we will examine to what extent by-products can be configured as commons, and what implications this has in the light of the Italian debate on commons. Third, the theoretical and practical scope of the theory of shared administration in the management of secondary raw materials will be analyzed. The analysis conveys the importance of embracing the commons theory and practice in order to concretely implement the circular economy paradigm with regard to the use of by-products.

## 1. Introduction

Secondary raw materials consist of production process residues or materials derived from the recovery and recycling of waste.

Within the context of waste law, such kind of materials was not distinguished from the general category of waste. The reason for this lack of distinction is rooted in the ratio of Council Directive 75/442/EEC of 15 July 1975 on waste. One of the recitals of the directive stated that *"the essential objective of all provisions relating to waste disposal must be the protection of human health and the environment."* In this perspective, the widening of the concept of waste was considered instrumental for an increase of the safeguard to the environment (de Leonardis 2021, 167; Feliziani 2014, 56).<sup>2</sup> This perspective progressively changed<sup>3</sup>, leading to an assimilation of secondary raw materials to "products". More recently, such an evolution has been boosted in the perspective of reaching the goal of circular economy.

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<sup>1</sup> This article derives from a paper presented at the IIAS 90<sup>th</sup> Conference, Public Governance for Climate Action (Track B3. Social Innovation, Commons and Administration, International Institute of Administrative Sciences), held in Brussels, on 15-18 December 2020.

<sup>2</sup> It should also be noted that the restrictive concept of waste adopted in Italy by Presidential Decree 10 September 1982, No 915 was considered in contrast with the European notion of waste (Iacovelli 2019, 201).

<sup>3</sup> On the extent of these changes, see *infra sub* par. 2.

With its Communication "*Towards a Circular Economy: A Zero Waste Programme for Europe*"<sup>4</sup>, the EU Commission has singled out a general approach for the transition from linear to circular economy, based on a more efficient use of resources. In particular – and considering that circular economy does not involve only waste management – a step forward with regard to the field of secondary raw material management has been made through the enactment of the directive (EU) 2018/851 of the European Parliament and of the Council of 30 May 2018 amending Directive 2008/98/EC on waste (from now on, "circular economy directive"), adopted in the context of the so-called Circular Economy Package.<sup>5</sup>

The EU legislator, although introducing significant changes, as will be specified *infra*, does not seem to significantly affect the concrete management of secondary raw material, since it leaves in this regard a wide discretion to the Member States in the implementation of the directive. From this point of view, the paradigm of circular economy may become a useful tool for Member States to enact industrial policies capable of favouring public-private partnerships for the management of by-products (Antoniazzi 2021).

Nonetheless, it is important to also consider the relevance of the local dimension, especially that of cities, as an autonomous legal space.<sup>6</sup> In fact, in every urban context, local communities have specific features and may play a central role in the sustainable development and green governance.<sup>7</sup> Hence, the margin of discretion left to member states seems wide enough to allow the activation of virtuous mechanisms in the management of by-products in a bottom-up perspective, enabling forms of collaborative economy (Molaschi 2020) mechanisms for the exploitation of such resources.

In this regard, it may be useful to refer to the theory and the practice of the commons, considering that they showed throughout time the capability of being instrumental to favour bottom-up initiatives to properly face the issues of local communities (Ciervo 2014).<sup>8</sup> In particular, in the Italian context, the debate about commons has triggered the experience of shared administration: a model in which taking care of commons becomes an activity that can be jointly carried out by public administrations and citizens.<sup>9</sup>

In light of these reflections, this paper intends to verify to what extent the theory of the commons and, in particular, the theory of shared administration can give useful suggestions in dealing with the problems of managing secondary raw materials, in a perspective compatible to the paradigm of circular economy. To this end, the discussion will be divided into three parts. First, the evolution of the regulatory framework for by-products will be analyzed in order to identify whether there is room for bottom-up mechanisms of by-product care.

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4 Communication from the Commission to the European Parliament, the Council, the European Economic and Social Committee and the Committee of the Regions, "*Towards a Circular Economy: A Zero Waste Programme for Europe*", COM (2014) 398.

5 The package was announced with the Communication from the Commission to the European Parliament, the Council, the European Economic and Social Committee and the Committee of the Regions, "*Closing the Loop: An EU Action Plan for the Circular Economy*", COM (2015) 614.

6 Legal scholarship has thoroughly deepened the concept of the legal order of the city (on this concept, see Cavallo Perin 2019; Cavallo Perin 2013; Frug 1980. On the implications of the legal concept of the city beyond the municipality, see, among others, Auby 2016; Cammelli 2019; Cortese 2020; Roversi Monaco 2016; Tati 2020).

7 Consider, for instance, that over 85% of the GDP of the European Union comes from urban areas (see [https://ec.europa.eu/regional\\_policy/en/policy/themes/urban-development/](https://ec.europa.eu/regional_policy/en/policy/themes/urban-development/), last accessed on 16 January 2022). Note also that, at the global level, Agenda 2030 for the sustainable development determines as goal n. 11 the goal of sustainable cities and communities.

8 Bottom-up initiatives regarding commons become important also in a polycentric perspective, involving top-down action (see Mansbridge 2014, 10).

9 On this experience, see *infra sub par. 4 and 5*.

Second, we will examine to what extent by-products can be configured as commons, and what implications this has in the light of the Italian debate on commons.

Third, the theoretical and practical scope of the theory of shared administration in the management of secondary raw materials will be analyzed.

## **2. From waste to resource: the secondary raw materials between the Waste Framework directive and the case law**

Within the context of the European Union, waste law represents a complex legal framework disciplined by several EU directives. In order to sketch out the main features of the legal concept of by-product it is hereby necessary to consider this body of legislation and especially the evolution of the concept of waste, also in the light of the case law.

The main legal act to consider is the Directive 2008/98/EC of the European Parliament and of the Council of 19 November 2008 on waste and repealing certain Directives, also known as "Waste Framework directive" (from now on, "WFD").

As this name suggest, this directive represents the basic act in order to understand the legal architecture of waste management: therefore, it is also the central act in order to get a definition of the legal concept of waste.

In accordance with Article 3 (1) WFD, "*waste means any substance or object which the holder discards or intends or is required to discard.*"

As one could immediately notice, the notion of waste is traced in a particularly broad way, in order to cover as many typologies as possible. Nonetheless, it is important to underline that the concept of waste is considered through a functional point of view: more specifically, the EU legislator has underlined the role of the holder (even when "required" to act) in "creating" a waste. The determination of the nature of the refusal ("discards") is left to the holder, in particular to his action and even to his intention ("intends"). As the European Court of Justice (from now on, "ECJ") stated several times, the classification of a substance or object as waste is to be inferred primarily from the holder's actions and the meaning of the term "discard".<sup>10</sup>

According to such a literal interpretation, the concept of waste is depicted as the result of the choice related to a good that used to be governed by ordinary rules of ownership. Furthermore, it has to be underlined that, according to Articles 10 and 11 of the WFD, the action of discarding can be interpreted as including disposal of waste, but also including actions of recovery (Backes 2020, 331).

In this perspective, the notion of waste may be seen as extremely broad. Nonetheless, the ECJ has played a central role in reducing the scope of application of this notion, distinguishing different situation.

For instance, the fact that a used substance is a production residue is considered evidence that it has been discarded or of there is the intention or requirement to discard it.<sup>11</sup> However, in the case law the concept of by-product soon emerged, i.e. any sort of "*goods, materials*

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<sup>10</sup> See among others case ECJ12 December 2013, *Shell Nederland*, C-241/12 and C-242/12, par. 37; case ECJ 24 June 2008, *Commune de Mesquer*, C-188/07, par. 53; case ECJ 18 December 2007, *Commission v. Italy*, C-263/05, par. 32.

<sup>11</sup> Case ECJ 15 June 2000, *ARCO Chemie Nederland*, C-418/97 and C-419/97, par. 84.



or raw materials resulting from a manufacturing or extraction process, the primary aim of which is not the production of that item, may be regarded not as a residue, but as a by-product which the holder does not want to ‘discard’.”<sup>12</sup> Even if initially the ECJ was quite restrictive in its approach to by-products (considering them as included in the waste law scope of application)<sup>13</sup>, throughout time the Luxembourg Court established a new orientation, distinguishing by-products from waste.<sup>14</sup> This distinction has also been included in the WFD through Article 5, which specifies the conditions to be met in order to consider a substance or object resulting from a production process the primary aim of which is not the production of that substance or object as a by-product.<sup>15</sup>

Another way by which the ECJ has restricted the notion of waste is through the concept of end of waste. The basic definition of end of waste is contained in Article 6 WFD.

A waste that has undergone a recovery, including recycling, operation and complies with specific criteria defined in Article 6 of the WFD may cease to be a waste. Also, the notion of end of waste has raised doubts only partly solved by the ECJ: it is necessary to underline that the ECJ considers that end of waste may be reached both by general regulation and case-by-case decisions, but it is necessary to avoid for this qualification to impact the environment or health of the individuals.<sup>16</sup>

In light of the above consideration, it can be noticed how the ECJ has gradually reduced the scope of application of waste law, allowing some secondary raw materials (originally included in the waste category) to be conceived again as normal goods.

## 2.1 The impact of the circular economy directive on the notion of secondary raw material

The legal framework as depicted above has been partly modified with the enactment of the circular economy directive. This directive has the aim of functionalizing EU waste law to the goal of circular economy.

As it has been stated, circular economy is a vague concept, susceptible of several different interpretations.<sup>17</sup> In order to give this expression a concrete meaning we may try to offer a “geometrical” comparison. Circular economy is a concept born in contrast with linear economy: according to the latter, enterprises create positive externalities through productive processes exploiting resources and creating waste; according to the former, the products of productive processes are still considered resources that can open up a new process of production.<sup>18</sup>

<sup>12</sup> Case ECJ 18 April 2002, *Palin Granit*, C-9/00, par. 34.

<sup>13</sup> See, among others, case ECJ 28 March 1990, *Vessoso and Zanetti C-206/88 and C-207/88*, par. 7, where the Court stated: “the concept of waste within the meaning of Article 1 of both Council Directive 75/442 and Council Directive 78/319 is to be understood as excluding substances and objects which are capable of economic reutilization.” See also case ECJ 28 March 1990, *Vessoso and Zanetti*, C-359/88; case ECJ 10 May 1995, *Commission v. Germany*, C-442/92; case ECJ 25 June 1997, *Tombesi*, C-304/95.

<sup>14</sup> Case ECJ 18 April 2002, *Palin Granit*, C-9/00, par. 34 and 35.

<sup>15</sup> The conditions are the following: “(a) further use of the substance or object is certain; (b) the substance or object can be used directly without any further processing other than normal industrial practice; (c) the substance or object is produced as an integral part of a production process; and (d) further use is lawful, i.e. the substance or object fulfils all relevant product, environmental and health protection requirements for the specific use and will not lead to overall adverse environmental or human health impacts.”

<sup>16</sup> On the issue of defining the end of waste, see, more recently, case ECJ 28 March 2019, *Tallinna Vesi AS*, C-60/18.

<sup>17</sup> Scholars have collected many examples of definition (see Kirchherr et al. 2017; Korhonen et al. 2018). It has been stated that the concept of circular economy is rooted in a market-economy way of thinking (Montedoro 2020, 179).

<sup>18</sup> For wider studies on circular economy and its differentiation from linear economy, see, among others, Cocconi 2019, 2020; de Leonardis 2017a, 2017b, 2021; Ferrara 2018; Scotti 2019. With particular regard to the role of public intervention towards the goal of circular economy, see Celati 2021.

In light of the above considerations, it is possible to shift to the assessment of the impact of the circular economy directive.

From a general point of view, one may notice that this directive basically innovates the legal background through the regulation of the following elements: a) clearer definitions of the fundamental concepts of waste; b) new binding waste reduction targets, to be achieved at the EU level, with intermediate values by 2025 and final values by 2030; c) stricter methods and rules for calculating progress towards the targets; d) stricter requirements for the separate collection of waste; e) stronger commitment to strengthen the implementation of the waste hierarchy; f) minimum requirements applicable to extended producer liability schemes.<sup>19</sup>

With particular regard to the discipline of secondary raw material, it is important to analyze the modifications regarding by-products and end of waste.

With the amendment of Article 5 WFD, the discipline of by-products is revised and, in particular, the competence on the adoption of “measures” to ensure the status of by-products is assigned to State Members: essentially, with regard to by-products, without prejudice to the conditions for the classification of by-products already set out by the WFD, the competence to define the relevant criteria at the operational level, in compliance with the supervision of the Commission, is now of the Member States (Muratori 2018a, 525).

Similarly, also in the amendment of Article 6 WFD, the EU legislator has assigned the competence to the Member States on the adoption of measures to ensure that waste subject to a recycling or other recovery operation ceases to be considered as such.<sup>20</sup>

In the framework of the novelties brought by the directive, with particular reference to secondary raw materials, from this brief analysis we can infer what follows.

A general consideration is that, taking into account the general set of objectives and measures, the approach of the EU legislator seems not new. Considering this whole legal framework, and as has already been noticed, the waste legal regime has always been inspired by an approach directed to the goal of circular economy (Cocconi 2020, 43): nonetheless, in comparison with the past, the circular economy directive provides stricter targets and even a more functional supervision and control system (Backes 2020, 341).

In addition, the EU legislator has limited the Commission’s role to that of monitoring the implementation carried out by the member states. This approach is also common to other environmental legislation at the European level and, while it may raise problems of effectiveness<sup>21</sup>, it allows States to seek new means of implementation.<sup>22</sup>

### 3. From waste law to commons approach

In light of such considerations, a concrete circular economy approach entails the reshaping of the means of secondary raw materials management: in this regard, the issue at stake is not a matter of setting objectives, but rather providing concrete instruments.

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<sup>19</sup> These elements are emphasized in Muratori 2018b, 141–148.

<sup>20</sup> See on this evolution Cocconi 2020, 16–19.

<sup>21</sup> For example, the issue of effectiveness has been raised with regard to the proposal for a Regulation of the European Parliament and of the Council establishing the framework for achieving climate neutrality and amending Regulation (EU) 2018/1999 (European Climate Law), COM(2020) 80 final of 4 March 2020 (Giorgi 2021, 22–25).

<sup>22</sup> In this perspective the EU legislator seems to build up a form of “experimentalist Governance”. On this type of governance see, among others, Sabel and Zeitlin 2008.

In this perspective, it may be interesting to move towards a different approach, namely by referring to the theories regarding the management of commons, for at least three reasons.

First of all, secondary raw materials share many elements with commons, even if they maintain some peculiarities.

Furthermore, secondary raw materials and commons share the same consubstantial need of being regulated for becoming resources useful for the relevant community.

Finally, the management of commons (not only in Italy) has shown the rise of many practices of management of goods representing a model.

In order to properly outline a framework for secondary raw materials management based on commons theory and praxis, the following paragraphs will hence be dedicated to showing why waste can be seen as commons and which kind of repercussion are foreseeable when implementing the tools of commons management in waste management.

### **3.1 Some hints on the commons debate and the role of Italian legal theory**

From the pioneer study of Hardin, legal scholars have become familiar with the so-called tragedy of the commons: according to this theory, some goods (the commons) when left to a collective and uncontrolled use may be undermined; in the worst scenario, this use can lead such goods to destruction (Hardin 1968).

According to Hardin the problem is caused by the non-exclusive and rival character of these goods: in other words, given that users cannot be excluded from the use of the common and, at the same time, users are rivals among them in this use, commons can easily be depleted.<sup>23</sup> Hardin believes the solution could be to shift from collective to private ownership.

From a totally different perspective, we can recall the results of Elinor Ostrom (Ostrom 1990). Ostrom showed that it is possible to lay down a different method of management of commons based on a voluntary and responsible self-organization by the community accessing the commons. The perspective of Ostrom – especially through the elaboration of the eight design principles for managing the commons (Ostrom 1999)<sup>24</sup> – underlines some other elements, namely the responsible use of commons<sup>25</sup> and the possibility of using commons in order to satisfy the needs of a local community.<sup>26</sup>

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<sup>23</sup> For a reading of Hardin’s theory in this perspective see, among others, Bowles 2004, 128–131.

<sup>24</sup> The principles are the following: “1. Individuals or households with rights to withdraw resource units from the Common Pool Resource and the boundaries of the Common Pool Resource itself are clearly defined; 2. Use rules restricting time, place, technology, and/or quantity of resource units are related to local conditions and to provision rules requiring labor, materials, and/or money; 3. Most individuals affected by operational rules can participate in modifying operational rules; 4. Monitors, who actively audit Common Pool Resource conditions and user behavior, are accountable to the users and/or are the users themselves; 5. Users who violate operational rules are likely to receive graduated sanctions (depending on the seriousness and context of the offense) from other users, from officials accountable to these users, or from both; 6. Users and their officials have rapid access to low-cost, local arenas to resolve conflict among users or between users and officials; 7. The rights of users to devise their own institutions are not challenged by external governmental authorities; 8. Appropriation, provision, monitoring, enforcement, conflict resolution, and governance activities are organized in multiple layers of nested enterprises.”

<sup>25</sup> This idea is implicit in the understanding of the 1<sup>st</sup> principle elaborated by Ostrom: this principle shows it is necessary to discipline “boundaries” in order to grant a responsible use of the good, without undermining it. Also, the idea of users’ responsibility is linked to the system of accountability enshrined according to the 4<sup>th</sup> and 5<sup>th</sup> principles.

<sup>26</sup> This element is particularly clear according to many principles, but especially the 2<sup>nd</sup> and the 8<sup>th</sup>: in fact, the management of commons should be thought in the light of the concrete needs of local communities; even when commons are particularly wide, it should be provided a multi-layered organization in order to match the different local needs.

Against Hardin approach, other "narratives"<sup>27</sup> may be recalled about the commons, like the comedy of commons and the tragedy of anticcommons.

The former – developed by Rose (Rose 1986) – has allowed it to understand that from a collective management of commons positive externalities or positive scale returns may be generated (Frischmann et al. 2019, 223).<sup>28</sup> The latter – developed by Heller (Heller 1998) – has demonstrated that forms of fragmentation of ownership on commons in too little forms of ownership may determine an underuse of commons<sup>29</sup>: in other terms, trying to solve the issue of waste through a strictly market approach, transforming collective ownership in several private ownerships, may lead to another tragedy.

Thus, in order to sum up the different perspectives of the mentioned authors, commons may be seen as a typology of goods that require a peculiar strategy of management: a form of cooperative management of commons following the perspective of the comedy of commons (in order to avoid both the above-mentioned tragedies).<sup>30</sup>

Bearing such considerations in mind, we can focus on the Italian debate, trying to isolate what can be understood as an Italian legal theory of commons.<sup>31</sup>

It should be noticed that many Italian legal scholars refer to commons as a concept pertaining to the Western legal tradition, especially rooted in Roman and medieval law (Ciervo 2012, 45; Dani 2014, 10). According to such a view, the "common" dimension is nothing new, but rather it is an alternative to ownership regimes that became more widespread in the modern era (Grossi 1977; Grossi 2019). This does not mean that the old concept can just be transplanted in modern times<sup>32</sup>: in fact, looking at the contemporary Italian legal texts about commons one may notice the plural way to reconstruct the phenomenon of commons, not only grounding legal theories on the same, premodern concept of commons.

According to a recent classification (Cortese 2016, 39-42), some commons theories are instrumental to creating a new idea of the public: according to such theories, commons represent a means i) for opposing the stream of privatization (Mattei 2017b, 147, 2015, 2013, 2011; Mattei et al. 2007); ii) to develop forms of safeguard, also in the interest of future generations (Lucarelli 2007a, 2007b, 2015, 2021); iii) more generally, to bring back to the public sphere certain utilities in order to make them functional for the tasks of the democratic and social state (Rodotà 2013).

Second, there is another stream of authors conceiving commons as a factor triggering new forms of cooperation between administration and citizens, requiring responsible management from administration and citizens and also overcoming the distinction between private and public towards a model of shared private-public management (Arena 1997, 2016, 289-292, 2021, 3).

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27 The role of storytelling in the commons has been emphasized, especially in favouring the spread of applications and the exchange of opinions (Daniels 2019, 91-105).

28 The expression "comedy of the commons" was originally developed in Rose 1986, 711-781.

29 The expression of "tragedy of anticcommons" has been employed (Heller 1998, 621-681). For example, this theory has been employed with regard to the establishment of renewable energy plants and transmission networks (Bellantuono 2014, 325-354).

30 It is worth noting that, originally, Heller believed that the remedy of the tragedy of the anticcommons could have been avoided only by leaving private ownership of commons to just few owners. Rather recently, Heller has stated that the vision of Rose is actually preferable with reference to some kind of commons (Heller 2019, 73).

31 We employ the expression "Italian legal theory" in accordance with the expression "Italian theory" as a philosophical stream based on Italian tradition. For an analogous use of the expression, see Cortese 2016, 58-61 who refers especially to Esposito 2014.

32 Regarding the risk of arbitrary use of the concepts employed in different historical periods, see Ferrante 2013, 329.

Considering all the issues raised by the several theories recalled so far, in harmony with part of the legal scholarship (Bombardelli 2016, 15-28, 2018a, 306-314), we may identify the following elements as typical of the legal phenomenon of commons: a) non-excludability; b) rivalry; c) responsible management; d) link to satisfaction of essential needs; e) being extraneous to market approach; f) reference to a common dimension; g) usability in absence of ownership; h) being beyond public-private dichotomy.

Nonetheless, such a list of commons' features need not be conceived too rigidly, ossifying the notion of commons, which should maintain, on the contrary, an open character (Gambaro 2013; Vitale 2013, VIII). As has been stated, the notion of "commons" conveys a wide range of different phenomena and has granted pervasiveness of the theme of commons in the most diverse legal and extra-legal contexts (Cortese 2018, 14). Moreover, it has been specified that the open character of the notion of commons allows it to move towards a different approach, underlining the role of interests: in other words, the reference to commons allows it to rethink the discipline of some goods focusing on the interests that are beyond their regime of management (Simonati 2016, 107-109, 2020, 168-172). In this way, the category of commons, even if not too strict, may be useful to make emerge the concrete asset of interests involved in a specific situation of goods' management.

### **3.2 Secondary raw materials as commons?**

In light of the above considerations, we may notice many parallels between commons and secondary raw materials. For a long time secondary raw materials were considered as just waste: in this way, like all waste, they were considered to undermine the non-excludable and rival good of public hygiene and wealth of environment.<sup>33</sup> In this way, they may trigger the typical situation of "tragedy of the commons", if left without any kind of regulation capable of limiting their impact on the environment. At the same time, looking at the problem of secondary raw materials through a merely market-oriented approach (such as, for instance, embracing a too liberal conception of circular economy) could lead to the risk of the opposite tragedy, the one of anticommons. The fragmentation of ownership on such goods may represent a disincentive in properly valourizing these goods, tragically leading to their underuse. On the contrary, by considering secondary raw materials in their nature, as a common resource<sup>34</sup>, at disposal of the public and private actors independently from their own ownership, it may favour a real implementation of a circular economy compatible with the idea of sustainable development.<sup>35</sup> In this way, it may be framed as an approach based on a responsible use of the secondary raw materials by their users. Considering that these resources, whether underused or abused, may impact on the exercise of public functions – considering that the bad management of such resources may lead to an increase in the production of waste –, public administration, on one side, and civil society, on the other side, should take the chance to cooperate in regulating the management of secondary raw materials. This way of thinking may also be seen from a different perspective, if we focus on the interests involved in the management of such goods (Simonati 2020, 174) in accordance with the approach

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<sup>33</sup> About management of waste as linked to the concept of public hygiene within the context of urban commons, see Frego Luppi 2016, 13.

<sup>34</sup> It is important to specify that the qualification of a good as a resource is not aimed at bringing about a market-approach of commons, favouring a capitalistic point of view on commons (see against the market-approach Donolo 2012, 19-20).

<sup>35</sup> On the interplay between these concepts, see Cocconi 2020, 1-21.



we presented before. There are many interests involved in the management of these goods, both public and private: moreover, such interests converge towards the same value, such as the safeguard of environment and public hygiene, but may also converge towards the goal of circular economy, when producing positive externalities for the community involved. In this way, the convergence may show the existence of a general interest, capable of being pursued through a common effort from administration and civil society.<sup>36</sup>

To this end it may be interesting to dive deeper into a peculiar form of commons management experienced in Italy, based on the pursuit of general interest, which could be seen as a reference, in order to frame a model of shared management by administration and civil society actors.

#### **4. Commons and shared administration: theoretical elements, actors and tools**

In Italy, the model of shared administration has been theorized at the end of the last century.

According to this theory, the collaboration between administration and citizens may allow a solution of the problems of general interest better than the classical, vertical model, based on a separation between administration and (active) citizens.<sup>37</sup>

This perspective was originally based on a reading of the relationship between public administration and citizens in the light of two constitutional principles: the principle of equality and the principle of autonomy.

The principle of equality, as enshrined in art. 3 (2) of the Italian Constitution in its substantial dimension, implies that the full development of every person is one of the main objectives of the administration<sup>38</sup>: to this extent the administration is just a means for the realization of the individuals. Thus, the citizen cannot be understood as subject to public administration, but instead as a protagonist with the public administration of the full achievement of equality (Arena 1997, 45-46 ; de Pretis, 2022, 40).

The principle of autonomy, as provided in art. 5 of the Italian Constitution, apart from safeguarding local communities and institutions from the central ones, recognizes the capability of self-organization of such local communities (Benvenuti 2006a, 2719; Berti 1975, 288): more specifically, this "relational" version of the autonomy principle directs the self-organization into the development of paritarian relationship between public and private actors, each one conceived as a reference centre of different kind of interests (Arena 1997, 46-49).<sup>39</sup>

Merging these two principles it is possible to create a constitutional ground capable of supporting the theory of shared administration.

In the following years, with the reform of the 5<sup>th</sup> Title of the Italian Constitution this theory has been boosted by a new principle: the principle of horizontal subsidiarity.

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<sup>36</sup> For the distinction between the three different poles of public, private and general interest, see Arena 2020b.

<sup>37</sup> On the concept of "active citizens" see Arena 2006 and, on the organizational features see Bombardelli, 2022, 137-143.

<sup>38</sup> Since the administration is part of the Republic, the duties of the Republic, in this regard, are also on the administration. On the implication of art. 3 (2) of the Constitution for the public administration, with particular regard to positive actions, see, among others, Ainis 1992, 582-608; Cerri 1999, 7-24; D'Aloia 2002; Giorgis 2006, 105-111.

<sup>39</sup> This approach is clearly based on the concept of demarchy as described in Benvenuti 2006b, 957-960.

The principle of horizontal subsidiarity is now contained in Article 118 (4) of the Italian Constitution, which states "*The State, regions, metropolitan cities, provinces and municipalities shall promote the autonomous initiatives of citizens, both as individuals and as members of associations, relating to activities of general interest, on the basis of the principle of subsidiarity.*" As has been stated, this principle entails that public intervention should be considered subsidiary to the assumption of subjectivity and responsibility by citizens (Pastori 2005, 1761)<sup>40</sup>, and it can be fully understood if combined with the already mentioned articles of the Italian Constitution (Arena 2017).

It is interesting to note the link that was created between this theory and the theory of commons. Profiting from the open character<sup>41</sup> of the notion of commons and from the scope of the horizontal subsidiarity principle, a regulation of commons has been developed based on secondary level sources (municipal regulations) drawn up according to a model developed by the association "Labsus" in collaboration with the Municipality of Bologna and then adopted by a significant number of Italian Municipalities.

One of the most important aspects of the discipline of these regulations is the provision of a specific legal instrument for the shared management of commons: the collaboration pacts.<sup>42</sup> These are consensual acts conceived not only to regulate the relationship between the administration and active citizens with regard to the use of the good, but also three moments considered extremely relevant in the care of common goods, namely: i) the identification, involving the community at stake, of the need to be satisfied; ii) the definition of the modalities of access to the good in the framework of a community relationship; iii) the attribution of responsibilities that must be shared in the interventions on the good (Bombardelli 2018b, 563-566).<sup>43</sup>

In this way, the shared administration theory has allowed it to give a theoretical background to a new form of administrative action<sup>44</sup> carried out by co-administrators.

Throughout the years the model has become quite widespread: from a quantitative point of view, this model has been enacted in 44 municipalities, and 830 collaboration pacts have been subscribed.<sup>45</sup>

Moreover, the concept of shared administration has also been recently summoned by the Constitutional Court: the model of shared administration has been expressly recognized as grounded on the Italian Constitution and as providing a legal framework for the relationships between the third-sector actors and the public administration in pursuing the general interest.<sup>46</sup>

In this perspective it is clear that the pole of general interest (and, consequently, the model of shared administration) may assume different forms: firstly, it is constituted by the relationship between the third-sector actors and the administration and, secondly, by the relationship between active citizens and the administration.

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40 On the scope of the subsidiarity principle, see also Antonini 2000, 99-115; Cerulli Irelli, 2003, Rescigno 2002, 5-50.

41 See supra par. 3.1.

42 On the qualification and on the features of collaboration pacts, see, among others, Giglioni, 2022, 86-93; Giglioni and Nervi 2019, 272-278; Michiara 2016; Calderoni 2016; Fidelbo 2018; Franca 2018.

43 See also Mattei 2017a, 87-100 on the limits of the pacts of collaboration and their possible enhancement through more participation in the political choice of priorities.

44 The spread of regulations on the shared administration of common goods has given rise to the development of an administrative function, in particular a function of the enabling State (Chiti 2017).

45 Data according to the 2019 Report of the association Labsus.

46 Case Italian Constitutional Court, 26 June 2020, n. 131 (on this judgement, see Arena 2020a, 1449-1457; Cerulli Irelli, 2022, 24-26; Galdi 2020, 88-121; Rossi 2020, 1184-1196).

## 5. Some examples about the shared administration on the management of secondary raw materials

By accepting the model of shared administration of commons and importing it in the field of secondary raw materials management it is possible to develop and implement models of co-management of secondary raw materials, based on public-private partnerships. Regarding the forms of such a partnership, a good model could be seen in the collaboration pacts, adopted on the basis of shared administration municipal regulation. There are already some examples that may show the potentialities of this model in giving a framework to the management of secondary raw materials.

A first example concerns an initiative regarding the collection of unconsumed food in order to favour the consume of products that otherwise would be wasted. This initiative has been regulated by three collaboration pacts in the municipality of Genova.<sup>47</sup> This initiative is also particularly important because it concerns a particular kind of by-products, namely consume by-products: as has been stated, to fully embrace the idea of circular economy it should be necessary to include into the notion of by-products even the raw materials obtainable from under-consume of food (de Leonardis 2017a, 195).

Thus, in this case the collaboration pacts shape a new form of collaboration compatible with the circular economy model. The actors involved in this collaboration are both no-profit associations and for-profit organizations, and for such private parties the collaboration pacts also entail the application of principles such as transparency, proportionality and sustainability.<sup>48</sup> Moreover, the obligations of the parties regarding the target also include the sensibilization of citizenship<sup>49</sup>, in the perspective of spreading the good practices.

A second interesting case concerns a classic topic of collaboration pacts: the regeneration of a public flowerbed. The interesting part is that in one of these collaboration pacts – namely one subscribed with the municipality of Trento<sup>50</sup> – the management of the flowerbed is implemented using recycled materials. This example is particularly important, since it shows how also the usual management activities typical of the shared administration model may have a spill-over effect of environmentally friendly best practices and especially in alignment with the circular economy paradigm. It should be underlined that this pact is very simple in its structure. Even if the pact is subscribed only by the municipality of Trento and a non-profit association, it obliges the parties to favour the participation of other citizens, especially the ones living in the neighbourhood.<sup>51</sup> Within the pact it is expressly stated that the materials to be used for the regeneration activity should be recycled materials.<sup>52</sup>

A third case that could be considered concerns again the municipality of Genova. In this case, the pact concerns the management of several centres for the reuse and reparation of goods.<sup>53</sup> The pact was subscribed by the municipality of Genova and three associations of

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47 The collaboration pacts are available at <https://www.labsus.org/2019/03/genova-speranza-grida-piu-forte-la-comunita-di-ricibo/> (last accessed 16 January 2022).

48 Cf. art. 3 of the three pacts available at the link quoted in note 69.

49 Cf. art. 2 of the three pacts available at the link quoted in note 69.

50 The collaboration pact is available at <https://www.labsus.org/2019/07/trento-dallaiuola-allinteresse-generale/> (last accessed 16 January 2022).

51 Cf. art. 1 of the pact available at the link quoted in note 73.

52 Cf. art. 3 of the pact available at the link quoted in note 73.

53 The collaboration pact is available at <https://www.labsus.org/2021/06/riuso-e-riparazione-un-patto-per-leconomia-circolare/> (last accessed 16 January 2022).

active citizens. This pact can be considered different from the others because it has been conceived in the context of an EU project that also provides some source of financing. This circumstance shows that the form of activities conceived within the context of the model of shared administration can also be seen as a tool to attract funding, even from the EU.

## 6. Conclusions

At the end of this analysis, we may try to indicate some conclusions. The set of the objectives of circular economy, in parallel to the restriction of the scope of application of waste law, have opened up the possibility for all the member states to discipline the management of secondary raw materials, making a resource out of them. However, this opportunity requires sketching out concrete legal instruments in order to implement the circular economy model. From this point of view, the debate about commons showed to be useful both from a theoretical and a practical point of view. From the theoretical point of view, we assessed how the debate about commons may be seen as a good reference point in order to better understand the problems of secondary raw materials. From the practical point of view, we presented the paradigm of shared administration of commons, as a possible chance to give a flexible legal framework for the management of secondary raw materials. This form of management can be seen as advantageous from several points of view.

First, it favours a bottom-up approach to the problem of secondary raw material management. The collaboration pacts make the community the protagonist of this bottom-up initiative, generating social innovation and also favouring the acceptance of public choices by the citizenship.<sup>54</sup> The examples of collaboration pacts we analyzed may confirm this assumption.

Furthermore, it favours local solutions for the disposal of waste, as stated originally by Ostrom, but also by the best practices of the shared administration model. It is also worth noting that, as held by the EU Legislator, urban waste still represents a problematic issue to be regulated, especially considering the peculiarities of the community at stake.<sup>55</sup> In this perspective, dealing with secondary raw material at a local level may favour the finding of solutions.

Eventually, this approach may lead to a full embrace of the paradigm shift (de Leonardis 2017b) implied by the circular economy and to a factual implementation of this model, not only through a market-based approach. Circular economy, instead of being based only on incentives and regulation centred on the role of companies to recycle or reuse waste, can also be grounded on concrete sensibilization and activation of citizenship and third-sector actors.

In this way it is also clear that the notion of commons, especially as long as conceived through the lenses of shared administration, may represent a good lockpick in order to unhinge the actual setting of secondary raw materials management, focusing more on the asset of interests involved in the activity.

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<sup>54</sup> On the capacity of collaboration pacts of being sources of social innovation, see in particular Ostanel 2017, 42-45.

<sup>55</sup> Cf. recitals 6-7 of the circular economy directive.

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# Support for Multi-Hazard Risk Reduction in Urban Local Bodies<sup>1</sup>

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## Abstract

India's urban assets and populations are highly vulnerable to a multitude of natural hazards, climate variability and environmental change. This can well impact on the entire nation, as economic output comes primarily from in and around its urban settlements. Empirical evidence from recent disasters, despite some major successes, reinforces the limited preparedness of Indian towns and cities to withstand multiple hazards such as fires, floods, extreme temperatures, earthquakes and strong winds. Unregulated growth and the quality of built environment are among a host of factors that have resulted in this vulnerability to disaster events. The research issue that this paper addresses is that of enabling the Urban Local Bodies (ULB) to implement disaster risk reduction and recovery framework(s) developed and agreed on at the national and sub-national levels. This paper highlights capacity challenges within local government for managing natural disasters amongst wider challenges of service provision. The paper draws upon empirical observations to argue that despite their best intentions ULBs are currently constrained in implementing the extensive comprehensive disaster risk & recovery approach driven by a multiplicity of national and multilateral policies. The paper provides observations from the Kosi River flooding disaster (2008) in Bihar state to illustrate this point. The paper further highlights that while this situation will not change overnight there are a number of practical opportunities to support ULBs in making an immediate start and superimpose risk reduction onto development programmes.

**Key words.** Urban Local Bodies (ULBs), Multi-hazard Risk Reduction, City Development Plans (CDP), Community-led asset management (CAM), Comprehensive Disaster Risk Management (CDRM).

## The role and constraints of ULB in managing risk

Hazard mapping by the Indian Government (BMTPC 2019) gives a comprehensive insight into the risk exposure of the country – estimating that 57% of land is vulnerable to earthquakes (high seismic zones III-V), 68% to drought, 8% to cyclones and 12% to floods. Between 1990 and 2020 there have been 1,000+ events of cyclones, droughts, earthquakes, floods and landslides affecting millions of people and causing billions of US dollars of economic damage both from direct damage and indirect losses.

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India is often known as a country of villages, with 72% of its population estimated to be in rural areas, while 28% are in heavily concentrated urban areas. However, more than half (53.7%) of India’s economic output (GDP) relies on the service industry concentrated mostly in and around the urban areas, with industry (29.1%) and agriculture (17.2%) making up the remaining sectors, located in rural or peri-urban settings. During the last 20 years several major disasters, both geo-physical and hydro-meteorological, have affected urban India such as in Uttarakashi, Latur, Bhuj, Mumbai, Vizag, Chennai. Rapidly growing urban areas in India continue to be vulnerable to multiple hazards.

However, the Indian government has taken bold affirmative steps to move away from a culture of *relief and response* towards a comprehensive framework for multi-hazard risk management in line with international practice, involving risk identification, mitigation, risk transfer and early warning/preparedness. India is a signatory to the 2015 *Sendai framework for Action* (and previously to the *Hyogo framework for action 2000-2015*). The *Disaster Management Act of 2005* and the *National Mission on Sustainable Habitat 2010*, although developing within separate institutional structures represents an overhaul in policy and institutional responsibilities on the identification of risks, reducing vulnerability & losses from natural disasters and mitigating climate risks through energy efficiency and waste management as core components of urban development. In all this the national government presents itself in a strategic role attempting to create the right enabling (and regulatory) environment with sub-national governments taking the lead in the design and implementation of the risk reduction strategies. The responsibility for mainstreaming this culture of risk reduction and disaster response thus lies predominantly at the sub-national level, mainly within Urban Local Bodies (ULBs) and District Local Bodies (DLBs). Sarbeswar et al. (2018) also calls for policy integration in transforming the urban and regional development agenda, based on the premise that *“integration of policies across different sectors and different government agencies is of vital importance to stimulating sustainable innovation at the city level ... Indian cities need to realign their vertically spaced institutional setting and replace with horizontally linked sections within Municipal Corporation”*, strongly recommending that functions of local utility planning and management are devolved to the municipal level governments.

Khosla and Bhardwaj, (2019) and Ahluwalia (2019) point to multiple capacity constraints that are barriers to an effective delivery of their mandates by Urban Local Bodies (ULBs), further highlighting the capacity, data and political capital constraints to creating systems of service delivery and risk management. The most obvious way forward under such constraints is for ULBs to work with development channels such as community-led-models that are essential to implement risk monitoring and mitigation at scale. Khosla and Bhardwaj (2019) draws upon examples of Indian cities to highlight a process of *“superimposition”*, where local level officials are managing risk related to climate change by dovetailing adaptation and mitigation activities within established development programmes and familiar official processes. Khosla and Bhardwaj, (2019) explains that *“The advantage of these models is that they already have regulatory support and previously proved to be cost-effective for scaling up programmes of a technical nature.”*

## Research approach

The author draws upon published sources of information to review the policy measures and mandate for comprehensive disaster risk management (CDRM) in India. An analysis of the response to River Kosi flooding (2008), one of the largest flooding events in recent history, against the CDRM framework of activities highlights the gaps between the plan and current practice.

The author also draws upon first-hand experience whilst working in Bihar state (and neighbouring Jharkhand) with several ULBs between 2010 and 2019 on projects related to disaster risk reduction, low carbon development and planning capacity development. Therefore observations from these visits illustrate the current constraints and support relevant to ULBs in their journey to implement CDRM.

## National and sub-national risk management system(s) in India

In recent decades the country and all its states have started to embark upon an ambitious and elaborate framework for disaster prevention, management, early warning and preparedness, much of which was overhauled in 2002 after a series of major disasters in the 1990s from earthquakes, flooding and cyclones.

The national development policy has witnessed a sea change from disaster response towards disaster prevention and preparedness. India follows a format of five-year plans and its Tenth Five-Year Plan 2002–2007 for the first time had a detailed chapter entitled *Disaster Management: The Development Perspective*. The plan emphasised the fact that development cannot be sustainable without mitigation being built into the development process. Disaster mitigation and prevention were adopted as an essential component of the development strategy. Following this, the *Eleventh Five Year Plan 2007–2012* (Government of India 2008) states,

*The development process needs to be sensitive towards disaster prevention, preparedness and mitigation. Disaster management has therefore emerged as a high priority for the country. Going beyond the historical focus on relief and rehabilitation after the event, there is a need to look ahead and plan for disaster preparedness and mitigation in order to ensure that periodic shocks to our development efforts are minimised.*

India set out its national and international commitment towards disaster risk reduction by signing the *Hyogo Framework for Action 2005–2015* and enacted the *National Disaster Management Act in 2005* with similar acts implemented at the state government level. India further signed up to the *Sendai Framework for Action* in 2015 and developed the *National disaster management plan* in 2016 (revised 2019). This has led to busy and prolific times for the Indian policy-makers, with a multitude of policies and structures evolving on other issues such as climate change, environmental protection and urban development. Firstly, with the growing prominence of climate change issues, India rolled out the *National Action Plan for Climate Change* in 2008. The NAPCC identifies eight missions<sup>2</sup>, including the *National Mission on Sustainable Habitat*, which aspires to promote disaster management and energy efficiency as a core component of urban planning with due emphasis on public transport

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<sup>2</sup> NAPCC missions are National Solar Mission, National Mission for Enhanced Energy Efficiency, National Mission on Sustainable Habitat, National Water Mission, National Mission for Sustaining the Himalayan Ecosystem, National Mission for Green India, National Mission for Sustainable Agriculture, National Mission on Strategic Knowledge for Climate Change.

and urban waste management. Separately, a national programme on urban renewal known as the *Jawaharlal Nehru National Urban Renewal Mission* (JNNURM) was also rolled out from 2006 onwards with the aim of maximising the potential of urban areas, as the bulk of India’s GDP is produced there, ensuring basic minimum services to urban populations and meeting India’s commitments towards the Millennium Development Goals (MDGs).

In the context of even more recent federal programmes, such as AMRUT and Smart Cities Mission, Ahluwalia (2019) writes that *“urban local bodies have come to acquire a host of functions that are new if not unprecedented. These include preparation of a city development plan, city mobility plan, city sanitation plan, e-governance, and meeting the numerous benchmarks set by the Government of India for service delivery.”*

Preparing the CDP (City Development Plan) was a core activity for all urban areas selected for funding support under the JNNURM. The JNNURM defined a CDP as:

*anchored on the Jawaharlal Nehru National Urban Renewal Mission (JNNURM) goal of creating economically productive, efficient, equitable and responsive cities. As a step to achieving this goal, the CDP focuses on the development of economic and social infrastructure, strategies that deal specifically with issues affecting the urban poor, strengthening of municipal governments and their financial accounting and budgeting systems and procedures, creation of structures for bringing in accountability and transparency, and elimination of legal and other bottlenecks that have stifled the land and housing markets. It provides a basis for cities to undertake urban sector reforms that help direct investment into city-based infrastructure.*

Components of a CDP were fully specified within a tool-kit of guidance that included the requirement to address disaster management (as an environmental issue) and the participation of communities as well as private investors in city development in partnership with urban authorities. Thus a CDP provided a wide range of options for the city or town in question and to a large extent legitimised partnerships with communities and the private sector. The CDP was developed by consulting a large number of stakeholders and thus set out a vision for the town or city and estimated the infrastructure and finance requirements for the city to achieve its goal.

Within both NAPCC and JNNURM references were made to disaster management, but there was no definition or even reference to the comprehensive risk management framework, leaving it open to the competence of the empanelled consultant authoring the CDP. As an illustration the CDP was required to provide an estimate of investment required in the town to provide basic infrastructure, say drainage or water supply. A consultant engaged to complete the CDP currently did not have to make references (or commission assessment) to locally specific maps showing the hazards that affect the town or conduct assessments on ways to mitigate the risk from these hazards. As a result any estimate of investment required did not have to build in risk mitigation measures. A critical opportunity to assess risk and operationalise risk reduction by recommending an appropriate level of investment for disaster resilient infrastructure was therefore missed. Scores of CDPs were written in India with a variable quality of risk assessment and investment for risk reduction. Each one could have been an opportunity to synthesise and progress the disaster risk, climate and urban agenda.

India’s progress report on implementing the Hyogo Framework for Action (2011-13) recognised that huge operational challenges existed in India, where, *“Disaster Management is primarily*

*dealt with by State Governments while national government plays a strategic role. State specific rules are to be framed. Dedicated Human Resource Support and funding arrangements need to be made for strengthening these SDMAs and DDMAAs.”* Further it recognised that there were multiple policy structures and frameworks that needed to integrate, for instance, a better connection between the climate change mission and the disaster management policy, with eight national missions on climate change intended to dovetail the mitigation and adaptation issues of CC and DRR under implementation by the concerned ministries. This is particularly important because the bulk of responsibility of implementation of all such policies lay at the sub-national level with ULBs and DLBs, and time and resources are limited in handling an increasing flow of responsibility laid out at the national policy level. Clearly the support agenda for the national and state government had to be spelt out in further detail.

India’s “National Progress Report on the *Implementation of the Hyogo Framework for Action (2011-13)*” further highlighted a number of measures to inform and empower governments and communities at the grassroots, including ULBs. It highlighted the *“increasing emphasis to incorporate hazard safety measures at the settlement planning level in Master Plans and City Development Plans CDPs.”* However, it acknowledged that amongst the many challenges were the absence of micro-level risk analysis at the state level and the absence of devolution of power and financial resources to the local authorities. These challenges are also emphasised by Khosla and Bhardwaj, (2019) and Ahluwalia (2019), with the latter pointing to the impact from state level not devolving resources, *“urban local governments have remained hamstrung by the lack of funds and are having to function with unfunded mandates.”*

The *2005 Disaster Management Act* proposed a three-tier Disaster Risk Management (DRM) structure in India: a National Disaster Management Authority (NDMA), headed by the Hon. Prime Minister, State Disaster Management Authorities (SDMAs), headed by respective Chief Ministers, and District Disaster Management Authorities (DDMAs), headed by the District Collector with further micro-planning anticipated at the ward level. The entire framework acknowledges that extensive partnerships at the local government level with trained and well-equipped civil society and communities are essential for DRM to succeed and be scaled up in India.

The following matrix (Table 1) provides an overview of institutions with DRM responsibilities, their roles/power and capacity. It is amply clear that the buck stops with the state government, and the ultimate channels of formal implementation are the municipal (Urban Local Bodies – ULBs) and district level institutions, with vulnerable communities and civil society playing a highly significant role in providing human resource and scaling up both awareness and efforts. In the Indian context, therefore, instruments such as the CDPs provided the best available opportunity to synthesise these partnerships between the administration, communities and the private sector.

**Table 1.** Disaster Management in India: Key actors and responsibilities

<b>Institutions</b>	<b>Roles/Power</b>	<b>Capacity/Resources</b>	<b>Liability/ Responsibility</b>
National govt. (NDMA)	Sets national policy + guidance + co-ordination mechanism. Regulation on risk transfer (i.e. insurance).	Adequate legislative, financial and research capability.	Responsibility for national policy & co-ordination.
State govt. (SDMA)	Each state sets unique state level policy + guidance. Establish state-level practices for risk identification, mitigation, preparedness, transfer, forecasting, emergency response & recovery/ reconstruction.	States have highly variable resources for adequate knowledge and planning. Lack of capacity and co-ordination amongst state departments to develop and implement plans.	Responsibility for state-wide guidance & co-ordination on risk identification, mitigation, preparedness, transfer, forecasting, emergency response & recovery/ reconstruction.
Local/ District govt. (DDMA)	Take cue from state-wide guidance, procedures and policy on local risk identification, mitigation, preparedness, emergency response & recovery/ reconstruction.	Reliant on state for provision of fiscal resources for adequate knowledge, capacity, planning and implementation. Does not have resources for forecasting. Planning and engineering resources are weak.	Ultimately responsible for implementation.
Private Sector	Own business continuity planning. Certification for public-private infrastructure projects for approval. Role in risk transfer heavily regulated by national government. Philanthropic activities for local risk identification, mitigation, preparedness, emergency response & recovery/ reconstruction. Some micro-insurance activity is permitted.	Variable.	Compliance with legislation for project approval. Informal partnerships with government during major emergencies.
Civil society	Consulted on national and state policy and practice. Involved in partnerships with government (at all levels) on risk identification, mitigation, preparedness, emergency response & recovery/ reconstruction.	Variable. Rely on philanthropic assistance.	Variable. No formal process of monitoring or accountability of their role in DM.
Grass-roots communities	Consulted on district policy and practice. Involved in partnerships with government (at local levels) on risk identification, mitigation, preparedness, emergency response & recovery/ reconstruction.	Variable. Rely on philanthropic and development funding assistance.	Variable. No formal process of monitoring or accountability of their role in DM.
Other (military)	Consulted on national and state level emergency response.	Defence budgets.	As requested, mostly under emergency procedures.
International institutions <sup>1</sup>	Advise national and state government. Provide development assistance.	Provide assistance.	Capacity building and mainstreaming.
Media	Independent and public services broadcasting and awareness.	State/privately owned.	Viewer market responsive.



## **Vulnerability in Bihar and the case of 2008 floods in River Kosi**

The Kosi flooding of 2008 is unique in that this major disaster took place in an era of rapid positive reform in India’s risk management culture. It can serve to provide a baseline and very valuable lessons on mainstreaming of risk management in India. Bihar is one of the most disaster prone regions in the world, and it is mainly its location and environment that makes it highly susceptible to flooding, extreme heat, humidity and strong winds. According to the state FMIS (Flood management information system) Bihar is India’s most flood-prone state, with 76% of the population in North Bihar living under the recurring threat of flood devastation. About 68,000 km<sup>2</sup> within a total geographical area of 94,160 km<sup>2</sup> (73.06%) is flood-affected. The plains of Bihar, bordering on Nepal, are drained by a number of rivers that have their catchments in the steep and geologically complex Himalayas and carry a high discharge and sediment load that they deposit in the plains of Bihar. The plains of North Bihar have recorded the highest number of floods during the last 30-40 years, with high magnitudes of floods in the years 1978, 1987, 1998, 2004 and 2007. The total area affected by floods has also increased during these years.

Human activity and poor appreciation of risk accounts a lot for increased vulnerability. The landscape across the state (and including its urban areas) has been heavily modified and obstructed for habitation, agriculture, transport and industry. Such modifications are increasingly being pushed to their designed limit and often (particularly where they are poorly monitored or maintained), when they fail, the result has been disastrous, as evident in the breach of the dykes during the Kosi river flood of 2008.

The Kosi flood (2008) was one of the most destructive in the history of the Indian state with extensive loss of lives and devastation to economic activity in all sectors (services, agriculture and industry). Not surprisingly it was declared a “national calamity”. The course of the flooding took both government and people by surprise as the regional modelling had predicted that in the eventuality that the river did flood, it would be in an altogether different direction. It was the non-maintenance of the dykes and the unexpected risk that led to numerous towns and villages being inundated and affected with severe damage and losses. Local authorities were severely under-resourced and unable to monitor and highlight risk factors, such as the strength of the dykes or buildings, even though they are a critical influence on the distribution and magnitude of losses

The flooding affected an estimated 3.3 million people in the northern part of Bihar, with deaths estimated at 1,000 persons. About a million people were evacuated and provided temporary shelter in 360 relief camps set up across the region. The total economic damage<sup>3</sup> alone has been placed at 1.5 billion USD, a majority of it in the agricultural sector and loss of housing or transport infrastructure. For years, numerous external agencies continued to provide assistance in the relief, recovery and reconstruction process. These included affected communities as well as hundreds of local and international NGOs. The World Bank (2010) had initially agreed to grant an interest free loan of 250 million USD to the State government repayable over 35 years towards *“recovery efforts through the reconstruction of about 0.1 million houses, 90 bridges and 290 km of rural roads. It also aimed to reduce future-oriented risks by strengthening flood management and monitoring capacity, restoring livelihoods, and*

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3 PDNA Kosi Flooding 2008, World Bank

*improving the emergency response capability of the state through a provision of contingency funding.”<sup>4</sup>*

## **The DRM culture emerging from catastrophic Kosi flooding**

The *Comprehensive Disaster Risk Management Framework* (CDRMF)<sup>5</sup> breaks up the hazard cycle into five key components, the *identification* of risk, the *mitigation* of risk, the *transfer* of risk, *early warning and preparedness* and, should a disaster strike, how *recovery* should take place. The latter is often referred to by the United Nations as “building back better”. It is interesting to review the Kosi floods of 2008 within this framework as it can reveal where the Bihar state can improve its preparedness and response to major hazards. Bihar has a long established civil society and along with communities they work closely with the municipal, district and state government. Despite such experience and capacity the scale and intensity of the disaster overwhelmed the affected areas. Gupta et al. (2019) further highlight that the Bihar DRR Roadmap envisages Resilient Cities as one of the five components (others include resilient villages, livelihoods, critical infrastructure and basic services), and ward level micro-planning is encouraged.

The predominant gaps are in the identification and mitigation of risk. Municipalities and district authorities are poorly resourced financially as well as in terms of skilled staff to monitor local flood mitigation measures within their jurisdiction, such as the condition of dykes and embankments and verifying their ability to withstand a major hazard. This was cited as the key cause of the Kosi flooding. A documented understanding of local risks and vulnerability is in its early stages. A recent survey of households reveals “heavy rain” and “extreme temperatures” to be perceived by households as the biggest causes of disruption to life and business in urban areas. Yet these did not feature in the CDP(s) that had been prepared for town and city development. Then there are less frequent but high-risk hazards such as earthquakes. The last major earthquake in Bihar was in 1934, so there is now little community memory of that, and SDMA is making renewed efforts to remind and prepare the masses for such an event. Mitigation measures such as drainage, acceptable micro-climates and good quality construction can only be realised through a combination of urban planning, green infrastructure, monitoring of buildings design and construction, drainage infrastructure and solid waste management; many of these skills and the resources to undertake them were observed to be lacking in the ULBs. As a result development is vulnerable to damage from hazards.

On the response and preparedness aspects while the army, police and volunteers were deployed in the aftermath of the disaster they were overwhelmed by the scale and intensity of flooding. The landscape is such that early warning and escaping in time to higher land is the only way to avoid certain death from rising waters. In some places piles of sacks indicate that water-levels had exceeded the roads built on raised embankments. Indeed in the district of Supaul (one of the worst affected), there are only a handful of permanent structures visible for miles, demonstrating the difficulty of building accessible emergency shelters here. Here

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<sup>4</sup> Sourced from the World Bank Website [www.worldbank.org](http://www.worldbank.org) (last accessed 13 January 2014).

<sup>5</sup> The World Bank and other international financing institutions are promoting the application of a comprehensive risk management framework which comprises three main elements: identifying hazard and risk exposure, reducing risk by implementing strategies to avoid hazards and resist disaster impacts and transferring or sharing the risks that cannot be reduced.

the only way to build is in the knowledge that much of it will be lost and will need to be built again. Earth and reed are thus the predominant materials for construction for the majority of the population that live here. People rely on media (where there is electricity) and word of mouth to obtain information on impending hazards, a system highly prone to fatal results.

On visiting one of the worst affected towns after the 2008 floods some interesting observations were made. The entire town has an estimated annual revenue of 90,000 USD only. Not surprisingly the ULB is stretched financially, there is not enough to pay the staff, let alone undertake appropriate inspections, design, capital works and maintenance. The author visited the areas worst affected by waterlogging after the rains. The main market for street vendors as well as the access to the railway station suffer the worst waterlogging annually. Undoubtedly both business and access are lost after a downpour. The ULB explained they try to do their best, at least to pump out water using the limited amount of equipment they have. They explained that during the rainy season there is nowhere for the water to go, the surrounding areas being all low-lying, and a drainage plan was needed. Currently the best that can be done is to pump water from one neighbourhood to another, which in itself is an expensive activity requiring resources for the fuel. They want people to build when they do in such a way that they do not disrupt water channels, making the problem worse. Overall, the ULB has little capacity to monitor what is being done individually by the people in the town. In another town close by, we saw equipment for Solid Waste Management in the ULB compound; it looked hardly used. ULB explained that although they had had the equipment for a number of years, the operator had not been appointed, as the job description had not been approved from the head department in the capital. Recruitment decisions could not be made by ULB on their own. This reality demonstrates that both procedure and resources are disrupting the efforts being made for comprehensive disaster risk management in Bihar. It has a long way to go before it can operate as a well-oiled concern capable of managing the expectations from the national and state policy on disaster risk reduction.

Urban infrastructure in Bihar, one of the least urbanised states and third most populous one, is already past its breaking point. While Bihar has low levels of urbanisation (11%) as compared to the rest of India (34%) the percentage of urban population that is poor is among the highest at 33.74%, well above the national average of 23.62%. The poor and their assets in urban areas inhabit sites that suffer adverse impacts from weather related hazards. Drainage, sewerage and other urban infrastructure in towns is poorly managed and cannot cope with even the current levels of variability in climate. Deaths and damage to assets result from recurrent flooding, heat waves, cold waves and high wind. The unhealthy conditions in towns are exacerbated by poorly managed motorised transport and a vast energy deficit resulting in the extensive use of diesel generators. This adds heat, noise and pollutants to the noxious mix. It is the poorest who have the least recourse to affordable means to adapt or escape such conditions. Bihar's progress in improving urban conditions and promoting investment is further threatened by anticipated climate variability and environmental change. Natural and built environments, livelihoods, economic growth and the several million people dependent on these are already suffering the consequences of recurrent flooding and weather conditions such as high wind, extreme summer, winter temperatures and changing seasonality.

Bihar is thus unique in that even with low levels of urbanisation there is growing vulnerability exacerbated by lack of revenues, further reducing the capacity of ULBs to manage the urban

environment. It is truly a vicious downward cycle, and it is difficult not to sympathise with the ULBs that despite their will and best intentions, the lack of resources and appropriate human resource is driving down urban conditions and possibly discouraging potential investors.

It leads us to think that while the overall policy environment is moving in the right direction and rich in its scope and the government has extended several benefits associated with policy implementation there is limited convergence and experience on how these can be translated into practice at the district or town level within the financial and cultural constraints that exist. ULBs and the local communities are well aware of the risks but do not have the means yet to work in a way that resembles the disaster management framework approach; it is still predominantly a culture of reacting and adaptation, whatever best is possible within their means.

The constitution of India does contain mandatory provisions for urban planning by ULBs and the development of DPC (District Planning Committee) and MDC (Municipal Planning Committee), and yet these are not being implemented because of the same constraints as above. How urban planning may be (re)institutionalised within the local political and development processes is an ongoing thought process.<sup>6</sup> Institutionalising planning in this way is required to enable Bihar ULBs to get access to national planning funds and potentially pave the way for private investment and incentives from urban, public transport and carbon-related finance. This will also go in some way to establish a stable policy and political environment that the private sector and investment community prefers. Interestingly the preparation of tools such as the CDP does potentially offer exactly this sort of opportunity that towns can access central government planning funds.

The State Disaster Management Agency (SDMA) appreciates the challenges of mainstreaming DRM within this context. They anticipate three pre-conditions for mainstreaming DRR within ULBs. Firstly integrating DRR responsibilities within the *municipal act* that sets out the responsibilities of the ULBs; ensuring budgetary approval of each department is contingent on their demonstration that DRR measures have been integrated and budgeted within projects and programmes; building the human capacity and finances at various levels. It is here that the Disaster Risk Management framework promoted by the State Disaster Management Authority (SDMA) should be defined in line with the state DRM strategy ensuring it is fully integrated in the governance and infrastructure strategy for any ULB.

Maskrey (2011) reminds us that CBDRM and LLDRM approaches remain valid and more necessary than ever if the goals of international frameworks such as the Hyogo Framework of Action have to be achieved. However, *“their potential will only be fulfilled when they are nurtured in the context of balanced partnerships between government and civil society, based not only on local participation and ownership but on political and economic support from national institutions.”*

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<sup>6</sup> Several ULBs have appointed “city-managers” who may prove to be a valuable conduit for establishing the skill base in the delivery of urban planning and investment.

## Supports for ULBs on risk management

The agenda for mainstreaming CDRM is set out, but what is a ULB to do in the immediate and short-term with its limited capacity? Changing the municipal act, clarifying departmental roles on DRR and agreeing on compliance and building resources and capacity needs to start soon, but it is by no means an overnight task. Enabling the ULBs to access plan funds and build up a systematic culture of planning and design for DRR and low-carbon will also take time. What is to be done in the meantime? The ULBs need to take on practices that have helped other ULBs scale up their programmes despite technical, regulatory and financial constraints. As a first step these could be part of the CDP(s) building up incrementally the capacity of ULBs to mainstream DRR.

Khosla and Bhardwaj (2019) observes that in several Indian cities bureaucracies are applying a practical method of “superimposing” risk mitigation measures upon existing and established processes within the cities. This has allowed measures such as ones concerning climate change to be introduced without extensive change to bureaucratic or urban planning processes.

Here we draw attention to some of the existing models already working within Bihar (and elsewhere in India) that have adapted well to the context and reinforce the capacity of urban local bodies cost-effectively. The selection of models is based on the immediate relevance to risk management and the fact that they are well recognised and transferable in the Bihar context. They draw together exactly the sort of stakeholders, partners and capacity that the ULBs require urgently to create better planning and infrastructure while they develop their own revenue base and capacity over time. They have the added advantage of being already in favour within current government policy.

Urban resource centres are *One-stop shops* that can provide information and guidance on a wide range of built environment issues to the ULBs. State-wide GIS data centres are already under development and may be equipped to take on this mandate of mapping hazards and vulnerability. Another example of these are the HUDCO building centres, initially launched by HUDCO as early as 1988; there are currently scores of *Building Centres* functional across India serving the districts. They were set-up with a view to propagate, disseminate and promote these innovative and cost effective housing technologies and to transfer them to the field situation. The grass-root level institutional mechanism serves the role of:

- Technology transfer of affordable and cost-effective technologies from lab to land.
- Skill upgrading and training to construction workers on conventional and innovative technologies.
- Production and marketing of building materials and their components.
- Construction of cost effective houses/buildings for various uses.
- Extension of house guidance, counselling and information dissemination.

ULBs are unlikely to afford or manage individual resource centres to identify risk, technologies and guidance on risk mitigation. Resource centres can be developed and managed at the state government level to provide location-specific guidance to ULBs. There are provisions



within central government funds for the creation of such centres. They can also guide ULBs on tools and planning techniques that ULBs can use to substantially reduce the demand for environmental resources – energy, water and cut waste.

Resource-constrained ULBs have also engaged in partnerships to enhance their performance despite the lack of own resources to do so. The most popular form of performance-based contracting is an ESCo, which provides performance and savings guarantees (say in energy efficiency-related services) and directly ties its remuneration to the energy savings achieved. In theory ESCo-based agreements can be applied to risk reduction, such as improved drainage or street lighting. Here is an example from Panchkula (Haryana). As part of its mandate to implement municipal-level DSM (Demand Side Management) BEE<sup>7</sup> has advised municipal bodies across India to replace their existing inefficient street lighting with products that were more energy-efficient. Municipal bodies, due to the paucity of funds and lack of techno managerial expertise, cannot undertake these measures on their own. In order to meet these obligations, municipal bodies such as Panchkula are forming partnerships with Energy Saving Companies (ESCOs).

Alien Group entered into an ESCo contract for 8 years with the Panchkula authorities (HUDA/HAREDA) and brought in an initial investment of Rs 1.55 crores for replacing the existing street light points. The ESCo will also undertake the maintenance and replacement of such points. The performance and energy-saving assessment of new fixtures is conducted by the technical committee and a maximum energy saving projection determined. The ESCo and the municipal body (HUDA/HAREDA) share the power savings and resulting Carbon Credits in a pre-determined ratio. An Escrow account is set up with the main banker of the municipal body to manage the monthly power sharing between the two parties for the tenor of the contract. The project is eligible for carbon credits, and that will further increase its profitability.

Amongst the promising and vital partnerships is the one ULBs could have with local communities. Local communities know their environment (and recall recent incidents) better than any other institution, and engagement with them is almost essential to minimise risk and deliver CDRMF. One of the key rationales for this is that in India the built environment is primarily created by communities; they are owner-builders. Even an estimated 50% of the community infrastructure is created by communities themselves, including drainage, paved streets, tree plantation and water storage. *Community Asset Management* (CAM) is an approach to the initiation, implementation and operation of community assets by the community, in partnership with other stakeholders, so that they will be appropriate to local conditions and last and in the process contribute to the cultural, economic, psychological, social and spiritual well-being of the community and the sustainability of the environment. In contexts where the people are poor the immediate interest is in livelihood assets, those that ensure that basic needs can be met. Demonstration programmes have been successfully carried out in India, Kenya, Malawi and South Africa.

Notably, it is designated practice to set out a CAM strategy within CDPs. The resulting benefits

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<sup>7</sup> The Government of India set up the Bureau of Energy Efficiency (BEE) ([www.bee-india.nic.in](http://www.bee-india.nic.in)) in 2002 under the provisions of the Energy Conservation Act, 2001. The mission of the Bureau of Energy Efficiency is to assist in developing policies and strategies with a thrust on self-regulation and market principles within the overall framework of the Energy Conservation Act, with the primary objective of reducing energy intensity of the Indian economy. BEE co-ordinates with designated consumers, agencies and other organisations and recognises, identifies and utilises the existing resources and infrastructure, in performing the functions assigned to it under the Energy Conservation Act. Bihar ULBs can benefit from the technical-financial advice that such an organisation can offer.

are better management of assets, cost savings and the generation of livelihoods amongst the user communities, all contributing towards more resilient infrastructure.

Above all, risk and the available capacity to deal with risk needs to feature prominently in the CDP(s) that are being developed for towns and cities as these will reflect disaster reduction within the vision and development strategy of the urban areas. This provides the starting baseline for the future development and financing of ULBs.

## Conclusions

With much of India’s GDP concentrated around urban areas, Urban local bodies (ULBs) are critical to the delivery of Disaster Risk Management and climate change adaptation in India. Since 2002, India has taken substantive steps towards developing a suitable policy environment that promotes comprehensive disaster risk management, environmental sustainability and climate resilience.

However, the analysis of a major disaster event in Bihar and recent observations within the state show that ULBs have severely limited financial and skilled resources and face an uphill task in meeting expectations. India’s progress report on the Hyogo Framework for Action also highlights that while much is being done to plan and implement DRR measures at the state and grassroots level, there are real challenges in devolving powers and resources at the ULB level.

It will take time to overcome these challenges, but in the interim ULBs will need to be “supported” in making a start through models that are already tested and accepted within policy and practice. Such “superimposition” is observed across many cities of India in addressing climate concerns where measures are introduced without the need for extensive change in bureaucracies.

Most of the urban built environment in Bihar is delivered by “owner-builders”. Therefore promoting partnerships with Communities is a necessary first step where ULBs can be supported in implementing CDRMF. Community-led Asset Management (CAM) and community “Microplans” have been tried in India, and City Development Plans (CDP) are already mandated to describe their approach on CAM and take into account community-led “micro-plans”. Both these models can easily include community knowledge of local hazard exposure, vulnerability and risk<sup>8</sup> until more sophisticated risk models are developed.

The City Development Plan (CDP) also offers a starting point to converge a number of policy ambitions on urban resilience and sustainability and enable ULBs to access several incentives and plan funding that the national government currently offers on low carbon growth, urban renewal and disaster management. It is important therefore that the ULBs are supported in utilising the CDP in the best possible way – as a portal to describe their capacity and approach to mainstream Comprehensive Disaster Risk Management within future growth and investment. This will also be a useful tool to raise financing from public and private sources.

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<sup>8</sup> Multi-lateral agencies such as World Bank and ADB are providing technical supports to ULBs in Bihar for the development of “community microplans”.

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