Race to the (lagoon) bottom: national costs, local revenues and the future of cockle fisheries in Venice Lagoon

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Abstract

The lagoon environment surrounding Venice is profoundly affected by the variety and intensity of economic activities it sustains. Among those, mechanical cockle fishing plays a central role in the disruption of an already instable ecosystem through its detrimental effects on the lagoon's bottom. Nonetheless the officially envisioned transition towards a regime of aquaculture has been so far delayed for its immediate negative impact on local revenues.

This paper tackles this situation by focusing on the institutional asymmetry between the two main factors affecting the lagoon's bottom: fishery management and environmental remediation. While the fisheries are governed by the local administration through a licensing system, the recovery of the hydrological damage induced by the fishery is run by a local branch of the Ministry of Infrastructure and executed through a large scale private concessionaire.

The analysis establishes a link between the institutional mismatch (Type I vs. Type II) and the cross-level asymmetry in cost distribution and highlights the role of the latter in establishing and reinforcing cost shifting practices from the local to the national level. The resulting overall governance structure appears thus to be locked into a regime of permanent damage and remediation, preempting any possibility for a transition towards the both less costly and less disruptive regime of aquafarming.

In such a context, both local and national actors are likely to oppose any re-scaling of water governance as this would, on the one hand, erode the indirect cross-subsidization local actors currently enjoy and, at the same time, subtract constant and secure national funding to those actors dealing with remediation activities in the world heritage lagoon.

Keywords

Multi-level governance, fiscal federalism, environmental institutions, transaction costs, cost distribution, coordination, cockle fishery, water governance, environmental remediation.

Legend

CCC	Coordination and Control Committee (Comitato di Coordinazione e Controllo
CVN	Concessionaire (Consorzio Venezia Nuova)
MAV	Venice Water Authority (Magistrato alle Acque di Venezia)
PoV	Province of Venice
SPA	Special Protection Area
WFD	(European) Water Framework Directive

Introduction

The lagoon environment surrounding Venice is profoundly affected by the variety and intensity of economic activities it sustains. Located in Italy, at

the north-western end of the Adriatic Sea, the lagoon area hosts the roughly 250.000 dwellers of the Venice Municipality (60.000 only on the historical centre of Venice), part of a broader metropolitan area of 1.600.000. Moreover, due to both its natural an artistic heritage, Venice represents the most visited tourist centre of Italy, hosting yearly more than 20 million visitors from all over the world (Source: Wikipedia.org).

Venice Lagoon encompasses a tourist and commercial transportation hub of national relevance: freight and cruise ships enter the lagoon every day through 11m deep shipping channels, dredged for such a purpose in a lagoon which is one meter deep in average. The harbour capacities of Venice have also played a central role in its evolution as a petrol-chemical refinery centre, storing deliveries from the Mediterranean Sea and serving the rest of Northern Italy. Completing the picture, agricultural activities take place both within the lagoon (St. Erasmus island) and around it, while fisheries represent an important source of income in the lagoon's economy and deliver produce for nation-wide markets.

All of these activities place direct pressures upon the lagoon ecosystem and are in turn affected by its conditions: both small and large scale navigation activities are deeply affected by the hydrological regime of the lagoon; agricultural produce depends on the chemical qualities of the soil and suffers from flooding events; while fisheries strongly depend, first of all, on water and sediment quality conditions. As a densely urbanised area, finally, Venice is under the pressure of flooding events, increasing in both quantity and extent and strongly connected with the hydrological regime of the lagoon.

Conversely, there will be no lagoon without human intervention: the lagoon in its present form has been only made possible through the river diversions in the past, halting the natural process of sedimentation that has created nothing less than the entire Padan plain. In the present, its very preservation would not be possible without continuous human interventions, which require the diversion of an equally continuous stream of resources into reconstruction and remediation activities. The relationship between human activities and the ecosystem are therefore intertwined: there will be no thriving economy without a healthy lagoon, but without a thriving economy there would be no lagoon as we know it today.

In the following we focus on one of the several economic activities taking place in the lagoon: mechanical cockle fishing. More specifically, we address the mutual dependence between economic and ecological system along the institutional arrangements that regulate fishery activities and environmental remediation in the lagoon. We subsequently provide an analy-

sis of the fishery regime and couple it with the institutional structures underlying morphological remediation in the lagoon.

The trait d'union that justifies this joint analysis is constituted by the morphological damage connected with mechanical fishing activities: being performed through suction dredging devices, mechanical cockle fishing has significant detrimental effects on the lagoon morphology. Even though such a detrimental side could be considerably reduced through an aquafarming regime, this officially endorsed and envisioned institutional transition lingers since years.

Our analysis seeks an explanation for this circumstance in the distribution of costs and benefits – hence in the institutional configuration – of both cockle fisheries and remediation: the asymmetry between those enjoying the benefits and those bearing the costs of the current regime, we argue, makes it unlikely for the transition to happen.

Furthermore, such an asymmetrical distribution becomes increasingly controversial in the light of the European Water Framework Directive and its rather novel ecological, economic and procedural dimensions. Moving decidedly towards ecological quality of water bodies and introducing transparency and reporting practices that include economic analysis of measures and interventions, the WFD has the potential to unravel this asymmetry – its implementation potentially facing stiff resistance from those who most benefit from the present situation[1].

The perspective chosen for an institutional analysis of both fishery and remediation regimes focuses on recent insights from the literature on multi-level governance and characterises both set-ups along the Type I / Type II dichotomy elaborated by Marks and Hooghe (Hooghe and Marks 2000; Marks and Hooghe 2003, 2004). In particular, the two governance systems seem to produce agencies which adhere to such dichotomy under two crucial dimensions: the link to political/administrative boundaries and the multi-purpose vs. single purpose divide. From this perspective the agency running the fishery regime can be ascribed to Type I, while the central role in the remediation regime is played by an agency closely resembling Type II.

1 Interestingly, the WFD distinguishes water uses from water services. For the latter, identified in water supply for drinking as well as industrial and irrigation purposes, the WFD goes even further as to require a balance between access and contributions from the three main user groups: urban dwellers, industry, agriculture. This requirement (though weakened by several exemption possibilities) goes under the concept of economic water provision and represents a threat to the currently widespread regime of cross-subsidisation in water provision in the EU.

Interestingly, in both cases an economic rationale can be found that justifies the specific choice of institutional arrangement: an analysis made on cost-effectiveness terms makes both agencies appear, per se, as sensible options for the tasks they are entrusted to. Institutional barriers are revealed that lock the present situation into a system of iterate and continuous damage and remediation – a system which is costly and ecologically questionable but which survives despite the availability of alternative arrangements that would, in the eyes of the authorities both economically and ecologically score better.

The paper is structured in two parts: Part I describes the system in both ecological and institutional terms and subsequently unravels the asymmetrical structure of burdens and rewards hindering the envisioned transition. Part II, exploring contributions from both economics and political sciences, suggest an economic rationale behind the current institutional arrangement. The concluding section re-elaborates the findings of Part I in the light of what returned by Part II and offers a joint perspective on the regimes described.

Part I

1. The system in brief

Venice lagoon is located at the low end of the Padan Plain. Such a plain has formed through the weathering of the Alps: over geological times, sediment-rich rivers flowing down from the mountains have accumulated their solid content until the plain was formed that now stretches from Turin to the Adriatic Sea. The dwellers of Venice, which have chosen to live on reclaimed ground in the midst of the Lagoon for the defence advantage of such position, were aware of the role water streams had in filling up the lagoon with sediments. For this reason, major river diversion efforts were initiated roughly 400 years ago[2].

A lagoon environment is characterised by a gradient of fresh to salt water and by a diversified water depth, allowing for a fluid variation between permanently flooded, temporarily flooded and emerged land. Such a variation in both elevation and salinity generates a high diversity of ecological niches, making lagoons in general, and Venice Lagoon in particular, biodi-

2 Source: website of the Province of Venice.

versity-rich environments. As a matter of fact, Venice Lagoon encompasses a plurality of SPAs (Special Protection Areas) both on the basis of EU and national regulations, implying that within this diversity of species, many rare and endangered ones find their habitat in the lagoon.

Lagoons survive on a delicate balance between the "push" of the upstream freshwater system and the "pull" of the downstream sea hydrology: on the one hand, rivers bring sediments to the lagoon and create this diversity in elevation that characterises it; on the other hand, sea and salt water intrusion to tidal events both create the salinity gradient which is vital to much of the flora and fauna and withdraw sediments from the lagoon, counterbalancing sedimentation. This means that a lagoon is constantly on the verge of sedimentation on the one hand, of erosion on the other.

Due to the diversion of main rivers such as the Brenta, the Piave and the Sile, Venice Lagoon's ecosystem has slipped towards erosion: the lagoon bottom loses yearly millions of cubic metres of sediments, becoming thereby deeper and flatter and allowing the salinity gradient to push further upstream. Such a circumstance has a further detrimental effect on the plants and micro-plants communities growing on the lagoon bottom and forming the "benthic layer": as the lagoon becomes deeper and more salty, ecological niches change and the resident species leave the way to different ones that better cope with the changed conditions. In the meantime, their role in stabilising the sediments decreases and further erosion takes place. In such a process, the ecosystem as a whole moves away from the characteristics of a lagoon and approaches those of a sea arm.

Human intervention, as already highlighted above, has crucially affected what would have been the "natural course of events" in case the lagoon would have been left to nature (most probably a full sedimentation of the lagoon or its transformation in a delta area similar to the Po delta some kilometres in the south). Unfortunately a re-diversion of the rivers into the lagoon is today not an option any more: water streams are not as sediment-rich as they used to be due to artificial upstream river basins. Water quality considerations also prevent such waters from entering the lagoon.

Direct and intentional human interventions are not the only anthropogenic factor affecting the lagoon's state: several human activities in the area heavily rely on a variety of ecosystem services provided by the lagoon. At the same time, many of them represent a further contribution towards an acceleration of the erosive path triggered by the river diversions: the dredging of shipping channels increases sediment uptake by the tidal currents, while navigation adds to the otherwise wind-induced sediment resuspension through increased wave action. In a situation where sediments are whirled up in the water column by the wind and then dragged

away by the currents, human economic and recreational uses of the lagoon rather accelerate than dampen the erosion process.

2. Mechanical cockle fishing

The cockle species "Tapes Philippinarum" appeared in Venice Lagoon in the eighties. As the name suggests, this cockle species (which in the following will simply be refereed to as "cockle") is allochtone and, free of competitors, quickly spread all over the lagoon. For about a decade, the growth of this population was left undisturbed (Granzotto et al. 2001). Commercial harvesting began with the nineties and generates income for estimated 2.000 fishers (Longo and Rosato 2004).

This late evolution implies that, despite the familiarity of the Venetian context with lagoon and sea fishing activities, a traditional, historical harvest of the cockle resource does not exist as such (ibid.). Technically, "traditional" harvesting techniques refer to simple manual harvesting, while "mechanical" ones refer to motor-ships (trawlers) equipped with suction devices that dredge the lagoon bottom. Moreover, traditional institutions and experiences for a managed exploitation of the resource are not available (Silvestri et al. 2006).

The ecological drawback of this harvesting activity is connected with its mechanised character and the contribution it provides in terms of erosion: suction dredges allow for a quicker and more effective harvest as compared to hand-picking as they are able to dredge the bottom, separate cockles from sediment, release the first on-board and the second back into the water (Pranovi et alii 2003, p 394–395). The detrimental effect in terms of erosion is thereby twofold: the sediment is heavily resuspended first, while, secondarily, the benthic layer is disrupted by the action of the dredge.

Cockle fishing can generate considerable monetary returns and constitutes a source of richness for the local economy. Indeed, quantities are sufficient to sustain nation-wide commercial activities. This new and valuable species of cockle also appeared in a moment of sector crisis and produce decline. As one can expect, the sudden high returns soon attracted market entries and a considerable fleet of fishers quickly started to dredge the lagoon's bottom for cockles (Nunes et al. 2003, p 3).

The initial open-access regime was progressively substituted by a regulated access through a licensing system. The authorities introduced the licensing regime as an intermediate step towards regulated aquafarming. The officially endorsed objective of realising an aquafarming regime would consist, as an alternative, in the allocation of conterminated areas

that are eventually separated from the rest of the lagoon's hydrology through specific devices and/or interventions such as poles, stonewalls, concrete structures or sandbanks[3].

Such a manoeuvre is nonetheless hardly conceivable in the current situation of poor regulatory enforcement and widespread poaching as it would make unauthorised fishing much more evident and difficult. Moreover, it would make it impossible for overharvested areas made unproductive to be replaced – each fisher would become responsible for the conservation of the area assigned to him/her and could not free ride at the expenses of others. Indeed poaching and overharvesting are issues that plagued cockle fishery ever since. The following section will outline the institutional dimension of the cockle fishery regime, followed by the remediation regime and its regulatory framework.

3. Two (Isolated) Institutional Arrangements

As a premise, it's important to stress that institutions are here conceived as bundles of rules (Bromley 2006; Vatn 2005). In these terms, the several actors mentioned so far and in the following shall not be directly considered as the institutions made object of analysis. Rather, they represent bureaucracies[4] acting within the institutional setting that results from both pre-ordered regulations and contextual circumstances (Ostrom 1999). In particular, those actors entrusted with decision-making and/or implementation tasks will be referred to as agencies.

Another clarification is necessary: we rely on the acknowledgement that implementation is not mere execution: as it can imply substantial discretionality, implementation is a process which is intertwined with decision-making, though in a form which is per se arguably de-coupled from representation[5]. In such a frame, agencies represent organisations whose field of operation is channelled to a certain extent by an institutional surrounding and left to a certain discretion for the complementary part. This means that the loci of decision making multiply along the levels of an implementation chain even in cases which are formally devoid of representation. In other words, decision-making efforts do not only refer to the operation of elective, representative bodies; they relate to whatever agency is entrusted with

3 Please note that no specific and binding plan has been drafted yet from the authorities.

4 Please note that for the full length of this paper, the terms bureaucracy and organisation are used as synonymous.

5 As we will see in the case of the remediation regime, such representation gaps can partly be compensated with ad hoc structures of political control.

tasks which are not fully operational. This implies that decision-making refers even to agencies such as the Venice Water Authority which do not have a direct representation profile. Moreover, entities such as the Province of Venice perform decision-making tasks not only through their elective positions but also through administrative ones.

For their part, agencies will also be kept separated from regimes. Regimes are defined hereby as the institutional arrangements converging on specified media. If institutions are thought of as bundles of rules, regimes are hereby conceived of as bundles of institutions that jointly regulate access and contributions to a specific environmental service. While unfolding, the following argumentation about institutional arrangements in the lagoon will therefore make reference to agencies acting within regimes, specifically the fishery regime and the remediation regime.

3.1 Fishery regime

Within the Italian legal system, fishery policy falls under the competence of regional administrations. This happens within a four-tiered administrative system which foresees the national state at the highest end, then regions, provinces and finally municipalities[6]. Each tier has an increasingly operational decision making power along functional streams[7], coupled with a system of elective representation[8]. In the specific case, the delegation chain starts with a Decree by the President of the Republic which entrusts Regions with law-making powers on fisheries. In turn, a law by the Veneto Region delegates to the provincial administrations the task of regulating fisheries within their boundaries – the Province of Venice encompassing the lagoon in its whole extension (Regione Veneto 1998).

The central agency in the fishery regime is therefore the Province of Venice (PoV): it regulates access to the fishery resources of the lagoon by the means of a licensing system. Fishing licences are issued by the PoV to individual fishers or their cooperatives. Licences have the duration of one

6 As a supranational entity, the EU would then represent a fifth tier.

7 We choose hereby not to enter the legal realm and discuss the implications of the choice of legal instruments available to the different levels. For the purposes of this paper is sufficient to consider jointly the legal /administrative system as a nested architecture of decision-making. From the highest to the lowest, each level has exclusive functional competences: it can either fulfil them or pass them on to one or several levels below. Duplication of competences is, in line of principle, not allowed.

8 Electoral mechanisms vary across the levels but all of them have an elective body backed by an administrative apparatus.

year and specify the amount of biomass allowed for harvest (Province of Venice 2006, art.17). Enforcement of the regime is performed by the Guardia di Finanza (GdF) – a police branch of the Ministry of the Economy and Finance – and by the judiciary, implying that such costs are borne at national level. Enforcement itself is very ineffective and unauthorised harvesting is widespread, even though the situation has recently started to change in the respects of poaching in polluted waters (Province of Venice/Press Office 2007a, 2007b, 2007c)[9].

Bargains about the licensing are held between the Province and representatives of the fishery sector[10]. Discussions are not centred on technological issues and manual harvesting has never been considered as an option (Granzotto et al. 2001, p 51). Bargains instead focus on distribution, location and extent of the fishing areas. Mechanical fishing is currently allowed only in specified but non physically separated traits of the lagoon[11]: rationale for this is to locate fishing activities away from the main navigation channels as well as from contaminated areas not matching minimum water quality prescriptions – a certainly sensible precaution given the presence of petrol-chemical industries and wastewater treatment plants on the most immediate lagoon borders.

Those areas represent a common pool resource for the fishers as a group. Despite the presence of fisher associations, the fishery is plagued by unauthorised harvesting and the cap represented by the licensing system is questionably able, even in case of full compliance, to keep the total harvest below a sustainable yield[12]. As a matter of fact, the regular request at bargaining tables is that of new and bigger areas, as the productivity of the old ones is declining because of overharvesting. At the same time, bargains about quotas and fishing areas are led by considerations of social acceptability and income protection rather than by arguments relating to the state of the catch and its habitat.

9 Please note that we leave such a circumstance out of the analysis. A centralised system of legal enforcement has surely implications in terms of federalism and/or multi-level governance. Such a path would nonetheless distract us from the main object of this paper: the distributional implications of separated fishery and remediation regimes.

10 Over the years, fishery associations varied from one to a few, they are nonetheless to be considered as single-minded as disagreement among them has never represented an issue, at least to the author's knowledge.

11 Other areas are available where only manual fishing is permitted.

12 A sustainable yield is intended hereby as a harvest over a certain period of time which is kept below the regeneration capacity of the resource itself. In this specific case, it is represented by a total yearly harvest of cockles which is lower than the corresponding reproduction rate.

Furthermore, fishers pay for their licenses. The resources this way collected are meant to cover the administrative costs of the issuing procedure. They do not cover for monitoring or enforcement costs of the license regime, neither they gather significant funds to undertake those maintenance, remediation or mitigation interventions[13] that would (partly) compensate for the damages systematically induced by the fishing activities. To give an idea of the relative incidence of such costs, the Province estimated that for every two euros of sale produce, a further third one is spent on remediation interventions (Granzotto et al. 2001, p 54). Such interventions fall under the remediation regime described below.

3.2 Remediation regime

The central agency within the remediation regime is the Venice Water Authority (MAV), a branch of the Ministry for Infrastructure and Transport. Both its funds and mandate come from the National Government and its authority extends to the lagoon's drainage basin. It has no direct political or administrative connection with the local elected bodies such as the Regional Government, the Province or the Municipality.

All interventions in the lagoon area are commissioned by MAV to one single operator: Consorzio Venezia Nunova (CVN). This is a consortium of middle and large Italian companies, active in coastal and infrastructural engineering projects all over the country and abroad. The consortium has its own organizational structure and operates on the basis of an exclusive concession contract stipulated with the government. At the outset, the reliance on a single private concessionaire was explicitly required by law (Law 798/1984 – see: Italian Government 1984, art.3(2)). This requirement was later on abandoned (Law 206/1995 – see: Italian Government 1995, art.5) but this did not invalidate the contractual terms between the government and CVN.

CVN still remains in the position of single contractor for any engineering intervention in the lagoon. The degree of integration between CVN and MAV is indeed surprisingly advanced and would be worth studying on its own account. Relevant for the aims of this paper is that a large portion of studies on the lagoon environment as well as technology development and computational modelling is entrusted to CVN. Official planning is then based for a good deal on knowledge generated within the Consortium. Moreover, the costs of the interventions by CVN are covered by MAV with national funds. Given the shared knowledge base and the direct chan-

13 For the sake of completeness, fishers also pay a revenue tax, at east for the authorized and officially declared catch.

nelling of funds, we consider in the remainder of this paper MAV/CVN as a single, hybrid, national-level agency entrusted with engineering interventions in Venice Lagoon.

Regular interventions are subordinated to the opinion of Province, Region and Municipality by the means of their participation in the Safeguard Commission. The Safeguard Commission is a board composed by representatives of these administrations and of the national Government. It reaches decisions on majority rule and its opinions have a binding character on the operations of MAV (Law 171/1973 – see: Italian Government 1973, art.5, art.6). For structural interventions and major projects, a further coordination and oversight board with the direct participation of the Prime Minister has been established (Coordination and Control Committee, CCC, law 798/1984 – see: Italian Government 1984, art.4).

Safeguard Commission and CCC represent the political control on the decisions taken over the necessary engineering interventions for the safeguard of Venice and its lagoon. Under this category fall the usual dimensions of water management, such as flood protection for the flooding prone historical centre of Venice, the maintenance of the lagoon inlets and shipping channels, the removal and/or treatment of contaminated sediments etc. (Italian Government 1973, art.6; Italian Government 1984, art.4(3)). What is not under the formal control of both Safeguard Commission and the CCC is the steering of economic activities within the lagoon – in our case the fishery regime described above.

4. A Joint Institutional Analysis: one interconnected institutional arrangement

The previous section has presented the institutional set-up for both regimes. The two regimes have been so far considered in isolation: attention has been granted to those institutions directly regulating fishery on the one hand and morphological interventions on the other. An ecological link between the two regimes exists, though, and is represented by the abovementioned degradation of the lagoon bottom generated by the fishing activity and regularly recovered by MAV/CVN. This section will point out the implications of such interconnectedness.

A central node in the consideration of what we can call the “resulting” or “cumulative” institutional arrangement is that the remediation regime has, per se, no institutional channel that directly attaches to economic policies in the lagoon – the role undertaken by both Safeguard Commission and CCC is limited to a judgement on the engineering interventions to be realised and does not involve any considerations on the economic activities

that take place in the lagoon. These activities are, within the remediation regime, taken as a given both in their extent and in their quality.

Following up, a judgement on type and extent of the cockle fishery lies entirely within the formal responsibilities of the Province, which exercises it through the licensing system described above. This makes it a matter of political bargain, both horizontally and vertically[14], which is formally decoupled from the broader spectrum of lagoon management. By allowing ecological damage to be realised and then recovered, the Province allows the fishery sector to shift costs on the broader society in return of the economic benefits provided by the fishing activity to a smaller part of the local community. The fishery sector enjoys, this way, a de facto regime of subsidisation.

The remediation costs connected to the fishing activities are borne by MAV through instalments from the National Government. This implies that economic revenues of the local fishing communities are partly made at the expenses of the rest of the Italian taxpayers. Moreover, the fact that the safeguard and preservation of Venice are at stake makes it unlikely for this channel of national funds to ever run dry. Despite the considerable amount of money these funds represent, they still are within the order of magnitude of the investments deemed of national relevance and therefore still affordable for an agency at national level such as MAV[15].

Finally, the recovery interventions undertaken within the remediation regime represent a further economic activity in the lagoon and account partly for the local, partly for the national economy. The introduction of a different fishery type (such as the aquafarming regime), would make these activities unnecessary while liberating conspicuous national funds for different uses such as education or transport.

Given the above, a two-dimensional regime of subsidisation emerges, channelling resources from the national to the local level and from the public to the private sphere. Such a regime would be largely dismantled by the envisioned transition towards aquafarming: the fisher community would incur in losses connected with the reduced possibility of both

14 "Vertically" means along the several levels of administrative and political organisation: National Government, Region, Province, Municipalities, etc. "Horizontally" means between State agencies and administration on the one side and civic and economic groups on the other.

15 As a matter of fact, the "Legge Obiettivo" or Target Law issued by the Berlusconi Government in 2001 and entailing exceptional regulations for strategic infrastructural interventions at the national level was aimed, among others, at safeguard measures in Venice lagoon – specifically, the mobile gates (Italian Government 2001).

overharvesting and poaching; MAV/CVN would lose budget/revenue from regular recovery interventions; PoV would have to bear conspicuous political costs as a retaliation from the fishing community.

On this basis, it is sufficient to endorse the assumption of budget maximisation for MAV, profit maximisation for CVN and the fishery sector and political support maximisation for PoV to understand their unspoken preference for the current system over the envisioned one. Plausible roots for the survival of the present regime have been detected. What is more, an institutional lock-in is experienced by the two agencies: the current distribution of burdens and rewards produces the converging interest for both to continue on the present path.

Both agencies have to step out of their respective competencies for the officially preferred transition to be realised. Hence the current setting shows deficiency in terms of institutional interplay, despite the ecological link calling for it. These limitations are strengthened but not created by the asymmetrical transfers of wealth sustaining the current arrangement. The second part of this paper elaborates on this finding.

Part II

1. From Fiscal Federalism to Multi Level Governance

The analysis has so far brought to light a situation of indirect subsidisation of the fishery regime. As this was not enough, the fishery regime in turn provides the remediation regime with good arguments for regular national spending. Economics would describe a similar situation in terms of perverse incentives and eventually prescribe fiscal equivalence as a principle for agency restructuring. Specifically, prescriptions based on the normative principle of fiscal equivalence would entail the matching of contributors, agency jurisdiction and beneficiaries of the regimes at stake.

Leaving the normative realm for the positive one means to look for a rationale behind the way agencies are structured (Oates and Portney 2001). The very asymmetry between the two agencies lie at the core of the failing transition. The question could then be raised, why agencies are structured in such an asymmetric way. In tackling this question we rely on two different strains of theory from economics and policy science: one contribution will come from the branch of economic thought that goes under the header of fiscal federalism; the more recent and growing body of literature on multi-level governance will then provide an extension of the reasoning.

Starting with fiscal federalism, we intend to extract an explanatory perspective from the principle of fiscal equivalence sketched above, an turn it from a normative concept to a positive one. The original formulation by Olson (1969) is well suited to a similar adaptation: in his pioneering work, the author suggests that much of the apparent duplication of services and bureaucracies in public matters could be ascribed to spill-overs in the distribution of costs and/or benefits provided by those agencies.

Core argument for Olson is that every time a good is provided with contributions from groups diverging from those enjoying the good itself, incentives arise for the provision to be re-sized accordingly[16]. This would be a direct consequence of the fact that, as Elinor Ostrom (1990) put it, "nobody wants to be a 'sucker"' and pay for amenities enjoyed by others. If the principle of fiscal equivalence is then to partly or fully explain the present configuration of agencies and regimes, the question could be addressed whether, in their present boundaries, they realise a matching of contributors and beneficiaries of the goods they provide.

In first approximation, both regimes seem to "fit" their specific constituencies: the fishery community matches the territorial boundaries of the lagoon, which in turn matches those of PoV. Conversely, the remediation regime acts within the very same lagoon boundaries, but for the preservation of a lagoon deemed of national importance. Hence, if treated in isolation, both regimes seem to pass the equivalence test, in spite of the asymmetry highlighted in the first part of this paper. The equivalence of regulators, beneficiaries, and contributors is here shown in Table 1, with the addition of the ecological boundaries.

Table 1. Equivalence for the two distinct regimes

	Fishery regime	Remediation regime
Regulators	local	national
Beneficiaries	local	national
Contributors	local	national
Ecological boundaries	lagoon (local)	lagoon (local)

As a matter of fact, Olson himself was well aware of the complexity of public matters often hindering the perfect match fiscal equivalence would

16 Please note that a coherent positive approach need also to restrain from all original wordings related with allocative efficiency and over/underprovision of specific good. The necessary identification of a socially optimal provision is not the goal of the present inquiry (Olson 1969, p 482 and follwing).

require. Subsequently, he suggests the idea that economic efficiency guide agency design while channels for compensations be put in place in second instance (Olson 1969, p 485–486). It's at this point that the idea of structuring agencies along an economic rationale spans a bridge between fiscal federalism and the study of multi-level governance.

Both fields indeed share an interest in the distribution of competencies emerging from processes of decentralisation and devolution of tasks formerly under the exclusive, centralised jurisdiction of national states. In particular, scholars of multi-level governance perceive governments as reducing their pyramidal form and assuming a networked or hybrid shape: nested hierarchical modes of governing public matters are complemented by new agencies that do not necessarily bear the same characteristics in terms of representativeness, accountability and political mandate (Bache and Flinders 2004).

It's precisely in this frame of "de-hierarchisation of the state" (Jessop in Bache and Flinders 2004, p 56) that we look for economic arguments behind the structuring of the agencies portrayed in this case study. We particularly refer to the strain of literature that contrasts an emerging "Type II" governance with the traditional Type I inherited by the Westphalian State (Marks and Hooghe, ibid., pg. 17 and following; Hooghe and Marks 2000; Marks and Hooghe 2003).

According to this literature, agencies traditionally have a territorial basis, fulfil multiple purposes and nest on each other, ideally creating a system-wide architecture for the provision of public goods. Such a nested system resembles a "Russian Doll" of jurisdictions with complementary competences based on the principles of federalism and subsidiarity (ibid.).

An increasing number of agencies, though, can be detected that do not fulfil such criteria. The action field of these entities, labelled "Type II", spans vertically across levels of political and administrative organisation as well as horizontally throughout the public/private divide. The talk is here of single-purpose agencies that do not necessarily identify their relevant constituencies on a territorial basis derived from administrative borders. Similarly, their design does not reflect representation purposes but rather adapts and shows flexibility in order to adequately deal with specific tasks, even to the extent of competing with or duplicating other Type I agencies. The leading metaphor is hereby that of the "Marble Cake".

Certain scholars in this field indeed focus on the economic rationale behind these novel approaches. The idea is to unravel the "efficient boundary of the state" and allow for an informed choice on possible trade-offs between representation or democratic legitimacy on the one hand and least costly service provision on the other (Birner and Wittmer 2004). Reference is made to the diversity of cost factors implied by choices in alternative in-

stitutional design. In their proposal, Birner and Wittmer distinguish for example between production costs and what is termed "governance costs", encompassing the costs of decision making as well as the costs of implementing a specific policy.

Each of these posts are further subdivided in direct costs and failure costs, the latter accounting for the sub-optimality costs generated by decision making or implementation failure, respectively. On this issue, though, we depart from the model proposed by Birner and Wittmer as we aim at cost-effectiveness reasoning: a thorough consideration for cost-effectiveness takes desired outcomes as a given and does not allow, therefore, for failure as such[17]. In other words, if we account for the costs of overcoming imperfect knowledge, the same imperfect knowledge is bound to leave the system.

Birner and Wittmer point at failure costs as deviation from a welfare curve (ibid., pg. 670). To move away from issues of sub-optimality issues is no reason to overlook those resources a governance arrangement grants to the avoidance of unwanted outcomes stemming from imperfect knowledge[18]. We could therefore focus on procedural issues and point at, respectively, the costs of monitoring (as efforts aimed at avoiding implementation failure) and policy adjustment (intended as the costs of reviewing decisions taken as the knowledge about outcomes increases over time or after specific events).

In the light of the exploratory character of the present inquiry, we choose to remain at a higher level of aggregation and leave similar issues within the posts of decision-making and implementation costs. Summarising therefore the line of thought we sketched above, we intend to investigate whether a specific economic rationale can be found behind both ap-

17 Comparing options for action on the basis of their cost-effectiveness means to choose among them on the basis of the costs they entail for achieving a given output and therefore a given level of effectiveness. This is for example different from a choice made on efficiency ground, which would choose the one option with the best cost/benefit ratio in relative (eventually marginal), not absolute terms.

18 As an alternative, imperfect knowledge can remain within the system if the assumption is made that perfect knowledge cannot be achieved. This would bring along the issue of identifying the degree of "sufficient knowledge" required by the decision at stake. Subsequently one would need to assess both the (decision-making) costs of reaching that degree of knowledge on the one side and the (substantial) costs entailed by the remaining degree of imperfect knowledge on the other side. We choose not to enter this discussion and assume that knowledge is costly but can be retrieved.

proaches: we specifically target the cost-effectiveness profile of the institutional arrangements chosen and break them down in terms of: production costs, decision-making costs and implementation costs.

Type I agencies, for example, being large, multi-purpose, potentially integrated organisations, bear the advantage of economies of scope as they can spread the costs of maintaining a bureaucratic apparatus over a high number of tasks. Production costs have therefore a potential to reap horizontal synergies between different branches of the same agency. On the other hand, vertical integration can be difficult and hide conspicuous red-tape: the nested character of such agencies can cause significant deviation from the initial targets all along the implementation chain – particularly in situations where decision making happens on a pronouncedly top-down fashion[19]. Under the assumption that decision-making and implementation costs inflate with longer implementation chains, both posts should score high for Type I agencies.

Type II agencies, instead, operate on single tasks in a way which is detached from direct political representation. This means that they operate on the territorial extent that is relevant for their specific task, potentially duplicating services provided by competing Type I agencies. In this case, production costs are unlikely to reap economies of scope in the light of the single-purpose character of the agency. A counterbalancing aspect could nonetheless be represented by the degree of specialisation the agency can reap and by its (non-trivial) effects on production costs. Ultimately, the specific kind of service to be provided can allow for a judgement on this post[20].

19 Please note that with this stepped we moved out from the application field of the "pre-model" developed by Mancur Olson. We still refer to the provision of public goods (or at least non-excludable ones); though, even if the assumptions of well defined constituencies, and no economies of scale are released, the pre-model does not consider interdependence and economies of scope. This circumstance implies that the arguments by Olson do neither apply at the provision of goods that affect one-another, nor to agencies other than single-purpose ones. We hereby precisely tackle goods which cannot be independently provided and agencies which achieve cost reductions by bundling tasks.

20 Please note that the same argument does NOT hold for Type I agencies. A nested, multi-purpose agency can always organise its different organisational units in a task-oriented fashion, if needed. A single-purpose agency, instead, is task oriented from the outset and cannot "broaden" its scope if not merging or co-operating with other agencies – implying an additional cost layer in the coordination with those and ultimately dismissing its own nature of single purpose unit. As a matter of fact, a similar manoeuvre would increase implementation and decision

Decision-making costs for Type II agencies are arguably lower than for their Type I counterparts. As Hooghe and Marks (2003, p 240) put it, Type I agencies directly respond to intrinsic constituencies, while Type II agencies gather extrinsic communities around them[21]. This implies that Type I agencies, compared to their counterparts, are bound to integrate the preferences of broader communities and do it along institutionalised procedures that have different purposes (accountability, legitimacy, etc.) than swift and focused, outcome oriented decision making. Implementation costs, on their part, can be significantly lower precisely in the light of the spanning-across-levels character of Type II agencies[22] as it effectively shortens the implementation chain and reduces the number of entities to be monitored.

Table 2. Cost profile of Type I and Type II Governance

	Type I	Type II
Production Costs	Low	Undefined
Decision-Making Costs	High	Low
Implementation Costs	High	Low

Table 2 qualitatively summarises the likely cost profile of the two arrangement types. Given the qualitative approach and in the absence of any quantification efforts, the analysis so far shows that the two institutional approaches are qualitatively different even on the purely economic basis of cost-effectiveness. Consequence is that, in case cost-effectiveness were the only criterion for the choice of

making costs while lowering production costs (via synergies) and decision failure costs (via inclusion of broader constituency).

21 The wording chosen by Hooghe and Marks and hereby reproduced is not necessarily unequivocal. Our interpretation is that intrinsic communities represent social or political groupings with a shared identity, while extrinsic communities are bundled together by a specific issue but their members do not necessarily recognise in one another. The referral to voice and exit is that given a shared identity or an ascriptive membership, individuals within the community cannot (at least easily) refer to different decision fora, while otherwise membership is a matter of option. To make an example, municipal drinking water provision services can be seen as the collective effort of an intrinsic community – water then being a "cultural" or "public" good, and decisions about it being taken by individuals as citizens; alternatively, such a service can be framed on a commercial basis, water then being a commodity and the community building around it being represented by users or customers.

22 Under the assumption that a longer implementation chain is costlier and involves higher slack and red-tape.

the institutional design and in case one intended to structure the decision along the dimensions involved by the line of reasoning sketched above, any judgement on the appropriateness of such a choice for a particular resource regime would then depend on an estimation of the incidence and relative importance of these four main cost categories.

Taking a more positive stand, the interpretative power of the Type I vs. Type II dichotomy could be tested by comparing the cost-effectiveness of alternative Type I / Type II set-ups with the tasks effectively undertaken by the agencies at hand. In other words, what kind of agency would we expect to find for each of the two regimes? Is this in harmony with the kind of agency we actually find? We rephrase the question in these terms: Does the actual structure of the agency represent a potentially least-cost option in the light of the tasks the agency has to fulfil in the regime it belongs to? This step is undertaken in the next section, after locating both the fishery and the remediation regimes in the frame of Type I vs. Type II Governance.

2. Application to the case

Before any further step is made, the point should be raised that the contribution from Marks and Hooghe as well as that by Birner and Wittmer referred to in the previous section both represent exploratory efforts. Similarly, the attempt to join them and derive a cost structure that captures the rationale behind the present agency structure is to be understood in exploratory terms and requires a degree of further adaptation before it can be fruitfully narrowed down to the case at hand.

The institutional arrangements concerning fishery and remediation in Venice lagoon match in many points the Type I and Type II dichotomy. In particular, we focus our attention on two elements: the multi-purpose vs. single character of an agency and the agency's jurisdiction following or not following political/administrative borders. As shown in Table 3, the fishery regime is led by an agency, PoV, which is multi-purpose and respects the political/administrative boundaries, while MAV/CVN does not respect them and has a single-purpose nature.

Table 3. Political/administrative boundaries and single vs. multi-purpose agencies

	Respecting political/administrative boundaries	
	yes	No
Single-purpose agency		MAV/CVN
Multi-purpose agency	PoV	

How does this impact the cost categories highlighted above? We try to answer this question with specific reference to the task assigned to both agencies within the regime they belong to. Considering the fishery regime, production costs refer to the process of license issuance, while decision making costs are those connected with the definition of a fishery policy for the lagoon. Finally, implementation costs are represented by the monitoring of the fishing activities in the lagoon, together with the issuance of fines and eventually prosecution of transgressors.

In these respects, production costs are likely to be lower for PoV as a multi-purpose agency than for a single-purpose one. It appears to be so in the light of the bureaucratic apparatus of PoV, which can reap economies of scope from the very fact of dealing with a number of different issues. To set up a bureaucracy from scratch for the running of the licensing system would arguably be more costly. PoV seems therefore to be a sensible choice in terms of production costs. The same can be said for decision-making costs.

If decision making concerns fishery policy in the lagoon, the cost connected with it are better dealt with by PoV in the frame of the political/administrative architecture than by an agency outside it: in particular, defining a fishery policy in the lagoon requires a degree of coordination from all centres of decision making within the lagoon boundaries. PoV not only has the boundaries that best match with those of the lagoon, but represent an "optimal" level for similar decisions to be taken: authorities one level above PoV (the Region) would have to differentiate between Venice and other provinces in order to best capture its preferences, while authorities one level below it (Municipalities), would require a level of coordination only PoV can offer.

As far as implementation is concerned, monitoring and enforcing the regime is a competence of police bodies anyway, making the related costs irrelevant for the design of an agency. In particular, there is no substantial reason to attribute better coordination between an agency and police branches either on the basis of the agency's multi-purpose vs. single purpose character or on the degree of the agency's embeddedness in the political/administrative architecture.

Moving to the remediation regime, MAV/CVN represents an agency dealing with medium and large scale infrastructural projects that, in the light of Venice's unique configuration, require innovation and a high degree of specialisation. Moreover, dealing with flood protection, MAV/CVN is required to act swiftly and effectively for the preservation of assets of national interest and ultimately for the safeguard of a world heritage ecosystem. In these terms, the relevant preferences to guide action within the remediation regime are those of the broader national (eventually international) community rather than only those of the lagoon dwellers. It's ultimately this basis that justifies the channelling of national funds[23].

23 An alternative and purely theoretical approach would be that of a wealth transfer on solidarity basis to be equated to the costs of eventual social unrest events spreading over boundaries of the lagoon area. Since poverty is not exactly an issue in Venice, we choose not to explore this nevertheless interesting option.

Representing a single-purpose agency, production costs are likely to be high. Nonetheless, given the high degree of specialisation required, it is unlikely that economies of scopes would substantially alter its cost-effectiveness profile: similar activities are not performed elsewhere within the field of action of MAV; there are therefore no savings or synergies to be reaped by bundling activities within a multi-purpose agency – a single-purpose agency appearing therefore to be the most cost-effective option. Besides, the cooperation with CVN can arguably provide a further layer of economies of scope as it comprises several engineering companies acting elsewhere in the country[24].

Besides, the fact of not respecting political/administrative boundaries has direct consequences in terms of decision-making costs. Multi-tiered decision processes require a degree of coordination on substantive issues and simply take longer time. MAV/CVN represents instead the shortest decision chain possible; it is therefore fair to consider its set-up as an economising option that bypasses an otherwise three-tiered decision-making process and replaces it with the instalment of Safeguard Commission and CCC.

Finally, cost-effective implementation is arguably boosted by the ecological boundaries of MAV/CVN which, differently from those of an equivalent Type I agency at national level, match perfectly with the extent of the lagoon. Given the above, both agencies seem to represent a cost-effective option for the tasks they are set to fulfil. More specifically, the choice of a nested, multi-purpose agency seems appropriate for the fishery regime, while a single-purpose agency with a jurisdiction based on ecological ground seems best suited for the remediation regime.

The multi-level governance setting produced by fishery and remediation regime seems here to fulfil the requirement of agencies structured along cost-effectiveness guidelines. In the light of this, how should the regime of subsidisation be considered? The concluding section elaborates on this.

Discussion and Conclusions

Part I has approached the consequences for Venice lagoon of establishing separated institutional architectures for ecologically joint processes. The institutional arrangement emerging from a joint consideration of fishery and remediation has revealed an asymmetrical structure of rewards and burdens substantially channelling national taxpayers' contributions into

24 The talk is here of economies of scope and not of economies of scale as production costs refere to those interventions taking place in the lagoon. Economies of scale are realised when fixed costs can be spread of a bigger production, lowering average/marginal costs. Instead, the fact that CVN subunits are also active outside the concession allows for fixed costs to be spread on a number of different productions – correctly termed as economy of scope.

mostly local private hands. Moreover, the pillar of such an asymmetrical structure, represented by the very concept of systematic environmental damage and recovery through engineering interventions, is incompatible with the officially endorsed goal of a transition to aquaculture. Hence the present institutional setting provides legal and ultimately societal protection to an officially unwanted resource regime.

Part II has explored the rationale behind such an asymmetrical institutional set-up. The asymmetry has been portrayed in terms of local vs. national level, hence representing a "scale mismatch". The analysis has shown that it is cost-effective to entrust the fishery regime to a multi-purpose, nested agency at local level such as PoV. PoV, according to the literature on multi-level governance, resembles a traditional, "Russian Doll" type I jurisdiction. The analysis has also shown that, on the other hand, it would not be cost-effective to entrust the remediation regime to a similar or the same agency: for such a task, instead, a cross-level, single-purpose, "Marble Cake" type II agency would be the cost-effective option. Hence we identify a "type mismatch" directly linked with "scale mismatch" at the roots of the subsidisation problem.

At this point, we will restrain from generalising that every type mismatch linked with a scale mismatch leads automatically to distributional issues as found here. Though, keeping both feet in the lagoon context, it is safe to say that the issue of asymmetrical distribution of burdens/rewards has its very core in the separated institutionalisation of the two regimes: if, singularly taken, institutions produce coherent agencies (as shown in Part II), at a joint consideration they raise not only a considerable problem of indirect subsidisation but an even worse deficiency in terms of an institutional lock-in (as shown in Part I).

Such a lock-in is represented by the converging interest, from both sides, in the continuation of the present institutional set-up. Such an interest, we argue, is deeply rooted in the separation between the two regimes, in spite of the cost-effectiveness rationale behind it. More specifically, the interplay between the two institutions is somehow preempted by the fact that, within the remediation regime, economic activities in the lagoon are considered as a given. Indeed, MAV/CVN has only a minor, consulting role to play in the annual re-shaping of fishing opportunities in the lagoon[25].

25 It is noteworthy to stress that, if institutions are considered as processes of societal crafting and re-shaping of individual opportunities (Bromley 2006; Vatn 2005), it is this very circumstance that makes remediation and fishery management two separated institutional settings

Elaborating further on the argument of separated institutionalisations, those scholars questioning the "external" character of externalities (Vatn and Bromley 1994; Martinez-Alier 2003; Paavola and Adger 2005) find in the present case a strong confirmation on two issues: 1) cost-shifting represents a better perspective on externalities than "unwanted effects" and 2) it's precisely the institutional setting that either condemns or grants protection to these transfers of wealth.

Hence, the distributional issues raised by the overall regime are not only hidden but also in-borne, nor would any re-scaling of either individual regime represent an appropriate option[26] to mend for them. We support hereby the conclusions reached by Moss (2004) envisioning a trade-off between "fit" and "interplay" in institutional design: since problems of "fit" cannot always be fully accounted for in the crafting of institutions, it appears necessary to structure agencies in such a way that enhances their interplay capabilities for the complementary part they cannot "fit" to.

Summarising, Part I identifies a deficiency in the institutional set-up and links it with the mismatch that comes from having set-up a national agency for the remediation of an inherently local nuisance. Part II shows, then, that such a mismatch can be justified on cost-effectiveness ground – effectively preempting any solution based on the re-scaling of either regime. Hence, solutions shall be sought in terms of institutional interplay.

Specifically, the deficiency these agencies show lies ultimately in their attempt to autonomously deal with processes that are connected with one another. The institutional barrier that keeps economic activities and remediation separated has been identified as the major obstacle to a transition long called for by the authorities themselves. Hence, integrating remediation in the broader spectrum of the lagoon's economic planning appears to be a necessary step. This represents our recommendation to decision-makers. Realising the full spectrum of beneficiaries and contributors of this complex institutional setting represents, we argue, a promising move towards an adequate understanding of the challenges it currently faces.

26 This would indeed represent the most straightforward prescription from the point of view of fiscal federalism. It has been mentioned before that a second option from the same school of thought would consist in a compensation payment between the two regimes – the equivalent of a Pigouvian tax. We do not enter on this discussion for two reasons: the first is that a Pigouvian tax would raise the Pigouvian-Coasean debate (Vatn and Bromley 1994), a settlement of which is beyond the purposes of this paper; the second reason is that the imposition on the fishery community of a payment amounting to half of their revenues is simply not feasible.

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