

# SPECIAL DISTRICTS: AN INSTITUTIONAL TOOL FOR IMPROVED COMMON POOL RESOURCE MANAGEMENT

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## A. Introduction

This paper explores benefits that rural and urban populations might derive from greater reliance on *special purpose* or *special district* governments in solving common pool resource problems. It focuses on West African countries<sup>1</sup> that, for historical reasons, now utilize variants of French institutional arrangements. Many of the points made here may apply as well to countries utilizing British-inspired institutional arrangements.

While special districts occur most frequently in the American context, they do share some characteristics with an important class of French institutional arrangements known collectively as “*l’intercommunalité*.” In fact in 1996 France, with some 36,500 communes, counted 19,000 inter-communal institutions (Bernard-Gelabert et Labia: 9). Of these 19,000 institutions, designed to facilitate inter-communal cooperation, a substantial majority (14,551) are single-purpose public enterprises (*syndicats intercommunaux à vocation unique* [SIVU]) (Bernard-Gelabert et Labia: 10). While not autonomous political jurisdictions, as are special districts, SIVUs are closely linked with the local governments that create them.

Provided that special districts prove useful in such settings, precedents thus exist for experimentation in this regard within the institutional tradition that most French tradition West African countries share. Moreover, some French and francophone African applied researchers specializing in economic and institutional aspects of renewable resources have long argued that devolution of renewables governance and management authority from the state to village communities provides an indispensable key to improved performance in the sector (e.g., Bertrand; Diallo; Diallo and Winter; Djibo et al.).

The paper first reviews the rationale underlying current policies promoting the devolution movement in the French tradition group of countries. These policies uniformly limit the extent of devolution to district level, general purpose governments. The paper then reviews an alternative institutional approach, the *special purpose district*. Four case studies follow, all drawing on applied research on popular efforts at *renewable natural resources governance and management* (RNRGM) in Niger, Mali and Senegal. Several highlight the importance of state-created enabling frameworks, but also underline the fragility of those frameworks, and implications of fragility for users’ strategies

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<sup>1</sup> The West African countries that formerly constituted the French West African Empire (*Afrique occidentale française*) or were associated with it as League of Nations Trust Territories, include Benin, Burkina Faso, Guinea, Ivory Coast, Mali, Mauritania, Niger, Senegal and Togo. To these might be added as well the four states created from the French Equatorial African Empire (*Afrique équatoriale française*), i.e., Cameroon, Central African Republic, Chad and the Congo Brazzaville.

concerning renewable natural resources. The paper concludes with observations about the potential utility of special districts in French-tradition West African states.

## **B. The Argument**

The argument can be rapidly summarized. When demand exceeds supply, sustained yield use of *common pool renewable resources* such as pasture lands, forests, fisheries, wildlife populations, ground water, surface water, and arable soil within watersheds, typically pose problems of collective action, or governance (Elinor Ostrom, 1991, 1992; James T. Thomson, 1992, 1993, 1997; Coulibaly and Thomson; Comité permanent...: *passim*). The same holds for many public services that have common pool characteristics, such as potable water supplies, farm-to-market roads, sewage and solid waste treatment and disposal, education and public health, and various forms of policing.

### *1. Observations on Local Collective Action*

Few such problems are particularly complicated in and of themselves; most populations know how to deal with them at least at a rudimentary level.<sup>2</sup> In the tough environments that fringe the Sahara's southern edge, it would indeed be amazing if people had not accumulated the social capital, local time and place information, and collective action skills necessary to address such issues. To ensure human survival, renewables must be governed for sustainable use in the arid Sahel. Even in the richer areas of southern Mali and Senegal, growing human and livestock populations increasingly pressure resource stocks, and human communities simply cannot persist without real skills in these areas.

But these communities cannot handle all the problems they confront relying solely on their own resources. Scale issues sometimes overwhelm local capacities. These arise with

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<sup>2</sup> This observation does not imply that local populations could never benefit from more technical knowledge about such problems. But whether higher technology approaches will prove more efficient, enhance accountability of agents to principals and ensure greater equity remains an empirical question that must be resolved on a case by case basis. This author believes it appropriate to assume that greater technical knowledge, taken together with the institutional arrangements through which that knowledge will most likely be delivered in West African French-tradition countries, *will not leave people better off*. This assumption contrasts with the more simplistic assertion that adopting higher technology approaches will automatically leave people better off. If local populations cannot control and manage a new technology (because of knowledge, material, cost or other constraints), they would be well advised to stick with nominally higher-cost but potentially more robust, less technological approaches. With just a mechanical grader, or even an animal traction grader, dirt farm-to-market roads can be easily reprofiled after the rainy season ends and brought back into passable condition. Paving such roads, e.g., with asphalt, might seem attractive because it promises an all weather surface. But if people in the local context cannot *regularly* and *reliably* mobilize and pay for specialized equipment and skills to repair potholes and otherwise maintain paved roads, the higher technology surface is both inherently less robust and more dangerous to economic development. Instead of opening new paths to outside markets, it may further isolate communities that have to depend on an increasingly impassable road for access to the wider highway network. Installing soil and water conservation works that local populations cannot maintain is another example of too high technology. Operating nurseries that depend on daily watering of seedlings in water-scarce contexts, rather than relying on natural regeneration, is a third. This footnote should not be viewed as Luddite romanticizing of low-technology environments but rather as a plea for an interdisciplinary evaluation of the costs, as well as benefits, of utilizing new technologies in specific settings.

regard to production of public services in large urban agglomerations; equipment costs; and certain resource treatment techniques. Equipment costs pose problems, for example those involved in some approaches to road construction and re-profiling after use. Similarly, water purification or sewage treatment often require a budget and technical capacities that exceed those available in the typical rural community or urban neighborhood. Secondary and higher education, as well as health care at levels beyond first aid likewise require a level of resources not available in most local settings. Solution of such scale, equipment and technical questions often requires greater coordination of collective efforts, both to mobilize resources and to allocate them effectively in some approach to provisioning. Not surprisingly, *subsidiarity* (Millon-Delsol: *passim*) as an operational concept has an important role to play in institutional designs appropriate for these settings. In this, Mali, Niger and Senegal resemble most other places in the world.

The main point remains, however: collective action issues at the local level are often not themselves particularly complicated.<sup>3</sup> They involve setting up institutional arrangements that allow officials to control access to and regulate use of renewable resources and services, and to mobilize resources necessary to carry out these activities in ways that affected populations consider roughly legitimate and equitable. They involve reviving or creating and maintaining institutional arrangements that enable users to hold officials accountable (Thomson, 1997). Yet these problems often remain intractable. Why?

The explanation of this problematic situation is at bottom institutional (Thomson, 1994). Both rural and urban populations often find, through repeatedly frustrated efforts or very limited successes, that they “cannot get there from here” – “here” being a situation in which overuse threatens degradation of a renewable common pool resource – because *transactions costs of organizing collective activities exceed the benefits*. This curious circumstance persists despite the fact that both renewable resources and public services in question often (and often strongly) influence production systems and quality of life of affected populations. Not infrequently, they condition the survival of those populations.

## ***2. Characteristics of Contemporary Devolution Programs in French Tradition Countries of West Africa***

Governments that allow so many manageable collective action problems to persist and fester, in ways that sap the human resources and economic development potential of both rural and urban populations, appear to ignore essential needs of their populations. They *deny authority* to their populations to organize at the level at which specific problems occur, and to undertake collective action targeted to solve single problems. Instead, through the wave of devolution programs currently in vogue from Senegal to Chad, they systematically create and apply inflexible governance frameworks that:

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<sup>3</sup> It may be difficult to create the institutional arrangements necessary to solve certain problems. But many people in many communities demonstrate great skills in designing institutional arrangements to solve collective problems. Others can learn them. Some communities cannot, however, solve collective action problems because of long-standing conflicts or other problems, or because over-lapping institutions make such local initiatives prohibitively expensive.

- ◆ impose general purpose local government units (LGUs) as the only authorized, officially legitimized form of “local” governance;
- ◆ establish the smallest authorized LGU – a county or district comprising between ten and seventy communities – well above that at which most basic-level renewable natural resource and public service problems occur;
- ◆ restrict issues that these LGUs can address and usually deprive them of meaningful authority over either policing or conflict resolution; and
- ◆ restrict resources that LGUS can mobilize to deal with collective action problems.

Given these characteristics, it may be reasonable to assume that those who design such devolution programs deliberately build in fail-safe mechanisms to ensure failure. Although a number of scholars have long speculated on the point (Bland), such a hypothesis could not be proved without a substantial research program going well beyond the kind of rapid evaluation efforts upon which this paper is based (Comité permanent Inter-Etats...; Swanson and Issaka; Thomson, 1997). But many government officials do have incentives to undermine devolution initiatives because they see themselves, through that process, losing control over resources.

### ***3. Official Rationale for Limiting Devolution Programs***

It is important, nonetheless, to note how officials justify limitations imposed by the central state on devolution programs in the French-tradition states of West Africa. The official rationale always stresses the necessity of maintaining central state supervision (*tutelle*) over local governments. The manifest impossibility<sup>4</sup> of posting a central government official to every rural community (many of which number fewer than 500 inhabitants) leads officials unerringly to a common conclusion. The *unavoidable issue of supervision* can be addressed satisfactorily only by grouping communities into sets of five to 60 or 70 and treating each such group as a local government. The state apparatus designates each of these multi-village units a *commune*. Legislation specifies the kinds of, degrees of, and limitations on, powers devolved to these *communes*.

Senegal excepted, West African devolution programs are still too new to have revealed their likely weaknesses. The *commune* (county or district) should probably exist as a level of governance: certain problems do, after all, occur at that level and would logically be dealt with most efficiently and effectively there. But to design a set of institutional arrangements *as though* most renewable natural resource and public service governance problems are best handled by a 10-village LGU (much less a 70-village jurisdiction) reveals one of two things. Architects of these systems either labor under extreme ignorance of rural and urban realities in these countries, or their dominant design criterion reflects the need, if not to ensure failure of local collective initiatives, at least to retain firm central control over these activities. As Oakerson (117) observes, these approaches

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<sup>4</sup> Such a strategy is impossible first in terms of limited availability of human resources. States that have been struggling for a decade or more to cut their personnel rosters in order to increase their operating budgets above the five percent (5%) level clearly recognize the negative cost implications of such an approach. Finally, *tutelle* at the level of small communities is pointless, since the frequency there of innovations in governance and conflicts with neighboring communities is limited.

fail to accommodate in any way variations in citizen preferences: “Little wonder that uniform decentralization schemes undertaken in various part of the world often result in local governments that locals do not want and in which they refuse to participate.”

In consequence, most LGUs underperform in most West African countries (Wunsch and Olowu; Green/Nigeria/Ghana/Ivory Coast; RTI/Robison: I:26-36). Administrative systems are sclerotic in French tradition countries where formal procedures have been exploited systematically to (1) enable those vested with authority to extract rents in exchange for its exercise (2) legitimize inaction in the absence of specific, direct orders from superiors. Outside forces – the state and centrally-controlled political parties – typically dominate LGUs. Bureaucrats, especially those in the Ministries of Interior and Finance, dominate local activities. Local elites often derive their power and authority from clientelistic relationships with outside patrons.

Local governments seem designed for failure. Central government decisions have often unilaterally expanded local governments’ mandates without correspondingly increasing LGU resources. Decentralization legislation typically transfers only unproductive tax bases to LGUs, while central political officials retain control over the most lucrative revenue sources. Intergovernmental transfers do not fill the gap because state budgets cannot meet national regime goals, much less fund many essential LGU activities.

Local government officials allocate most of their limited resources to personnel rather than budgets and so predictably undermine any hope of furnishing citizens reasonable levels of services. Supervision (*tutelle*) opens the door to invasive micro-management. Multiple forms of supervision exist, all of which central officials can abuse in their search for rents or as part of an effort to prevent subordinates from in turn abusing their powers. Whatever pro-subsidiarity rhetoric the national regime may employ, national agency personnel by and large oppose the idea because it undermines their rent sources.

In French-tradition systems the urban *commune* or the *commune rurale* have been adopted as “least common denominator” LGUs under national legislation specifying devolution. Rural communes always incorporate multiple villages (10-50 in populated agricultural areas, sometimes as few as five in arid pastoral areas; in Mali, the average commune administers 44 villages [30,000 villages/682 rural communes]). Commune boundaries often simply reincorporate the boundaries of pre-existing administrative units (*postes administratifs, arrondissements, sometimes cercles*), although some do now recognize a pre-colonial group of villages that share a tradition of collective action for common purposes. Where communal councils are elected, enabling legislation does not usually stipulate that each village elects a representative to the communal council.

Local governments have little credibility. Citizens typically prefer to establish their own coping arrangements which, while usually less than adequate in terms of the service levels they can provide, offer the following advantages:

- people often participate in designing and modifying these structures so the rules reflect their understanding of the target problem as well as their experiences; and
- officials of these informal institutions mobilize resources to finance activities the institution pursues, but they do so on a basis of accountability for their stewardship of common funds.

Special districts sized to the dimension of common pool resource problems may offer a useful institutional alternative to general purpose, district-level commune governments.

### **C. Special Districts: Institutional Arrangements Supportive of Self-Governance**

Larry Schroeder authored an insightful paper on special districts (Schroeder: 1994). This paper reviews the functions that special purpose districts serve in the United States, where they are both found more frequently than anywhere else in the world and are, in that country, the most prevalent form of government institution, in terms of sheer numbers. It next analyses potential costs and benefits of special districts compared to *general purpose governments*.<sup>5</sup> Schroeder then speculates about possible applications in other countries of the special district institutional form as a solution to certain kinds of collective action problems, notably those concerning provision and production of *public services*. He concludes by stressing the extreme importance of avoiding easy generalizations about the utility of special purpose districts, insisting on the necessity of analyzing usefulness of this institutional form case by case and problem by problem.

Written under a decentralization project financed by the United States Agency for International Development (USAID), the paper uses the U.S. Census Bureau's definition:

Special district governments are independent, limited-purpose local governmental units that exist as separate legal entities with substantial administrative and fiscal independence from general purpose governments. As defined for census purposes, the term Special District government excludes school district governments, counties, municipalities and townships (Schroeder: 2, citing U.S. Census Bureau, 1988, pp. v-vi).

In the United States special districts constitute more than half of all LGUs.<sup>6</sup> The Census Bureau uses four criteria to qualify LGUs as special districts:

- formal organization, e.g., incorporation as a public legal entity
- characteristics of a government, including the *power to make and enforce rules* defining membership, means of selecting and removing officials, terms and

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<sup>5</sup> General purpose governments typically provide a number of public services, ranging from policing and fire suppression through water supply and sanitation, street lighting, sometimes health and education, to road construction and maintenance.

<sup>6</sup> Special districts, including public education special districts, accounted in 1987 for *more than half* (44,253, or 53%) of all governmental jurisdictions in the United States, as counted by the Census Bureau (83,236) (Schroeder, 1994: 2; Annex, Table A-1).

conditions of access to the resources or services produced by the district, and mobilization of resources to finance investment and operating budgets

- substantial autonomy from the general purpose governments which create them (in the United States, often through enabling laws developed by individual states)
- concentration on a single or at most a very limited number of (related) services, e.g., water supply and waste water treatment.

From Schroeder's public finance perspective, special districts offer a complex mix of advantages and disadvantages. Time and place specific, they must always be analyzed in the particular context within which a given service is produced. He evaluates special districts by three separate criteria: efficiency, equity and accountability (5-20). Although these criteria perhaps apply most directly to public services, they are worth examining briefly because of their implications for the governance and management of renewable resources. Schroeder specifically argues that "...efficiency constitutes the principal potential benefit of special district governance...." (5).

### *1. Efficiency*

Efficiency concerns technical and economic efficiencies. Technical efficiency involves achieving the lowest possible cost of transforming inputs into outputs. Economic efficiency, by contrast, involves achieving equivalence between the added costs that a group incurs in producing a public good or service, and associated benefits. The author, separates *provision* responsibilities<sup>7</sup> from *production* activities.<sup>8</sup> This may enable provision units, i.e., general purpose or special purpose governments, to overcome disadvantages of relying on a monopoly supplier of services (often, the governmental unit itself) by contracting out production functions to other public entity or private sector suppliers. Competition among potential suppliers for the "trade" of the providing unit can enhance efficiencies and cut prices charged by the producing unit that wins the contract.

Schroeder highlights another significant distinction concerning *transformation* and *transaction* costs (7-9). Transformation costs involve both production and provision processes. Costs of inputs necessary to produce an output – production – are clearly important. But transformation costs involved in the provisioning process are likewise important. They concern articulating and synthesizing citizen/users preferences for goods and services, as well as "arranging for and monitoring production of these services...regulating use...and arranging financing of the service..." so that those who benefit pay their fair share through user fees or taxes (8).

Transactions costs can be sub-divided into coordination, information and strategic costs (Schroeder, 1994: 8, quoting Ostrom, Schroeder and Wynne [1993]). Coordination costs overlap with provisioning and production transformation costs. They involve the time, effort and capital required to negotiate, monitor and enforce provisioning and production

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<sup>7</sup> *Provision* responsibilities involve deciding whether to produce a good or service, how much to produce, under what arrangements, how to finance production, and evaluation of the results (Ostrom and Ostrom).

<sup>8</sup> *Production* activities involve transforming inputs into outputs. They combine technical processes and the management of the labor involved, as well as economic, financial and legal issues. (Ostrom and Ostrom).

arrangements. Information costs arise both in finding appropriate information and through errors resulting from suboptimal blends of local time and place with technical information. Strategic costs highlight the games people play in trying to avoid paying their fair share of the costs of a service or a flow of resource units, or in seeking advantage over others. Included here, in provisioning costs, are free-riding and shirking.

**TABLE 1. RNRGM SPECIAL DISTRICTS: POTENTIAL PROVISION COSTS**

POTENTIAL COSTS AND BENEFITS OF RNRGM THROUGH SPECIAL DISTRICTS		SD FOR RNRGM: PROBABILITIES <sup>9</sup>	
PROVISION	<b>Transformation:</b> converting scarce inputs into outputs	<i>Economies of Scale:</i> costs vary inversely with scale of production	Unlikely for most renewables; contracting out can handle exceptions, e.g., fish hatcheries, large-scale dams
		<i>Economies of Scope:</i> costs vary inversely with number of services a jurisdiction provides	Possible, e.g., water and forest management, forest/pasture trade-offs; coordination among special districts can address scope issues
	<b>Transaction:</b> negotiating, monitoring and enforcing agreements	<i>Information costs:</i> gathering information, costs of inadequate blend of local time/place and technical information	Matching service quantity and quality and user preferences more feasible in SDs; members may pursue technical help
		<i>Coordination costs:</i> negotiating, monitoring and enforcing agreements	Internalizing spatial spillovers: RNRGM SDs reduce costs of reaching consensus; policing often RNR-user specific
		<i>Strategic costs:</i> opportunistic behavior	Depends on design of RNR special district governance institution(s)

<sup>9</sup> The acronyms in the first line stand for special districts (SD) for renewable natural resources governance and management (RNRGM). *Probabilities* highlight, in speculative manner, the significant costs or cost savings that can be anticipated if RNRGM is conducted through community-level special districts or special districts that several communities may jointly organize to address governance problems raised by a specific local renewable resource.



<b>PRODUCTION</b>	<b>Transformation:</b> converting inputs into outputs	<i>Economies of Scale</i>	<b>Matching services with user preferences</b>
		<i>Economies of Scope</i>	
	<b>Transaction:</b> negotiating, monitoring and enforcing agreements	<i>Information costs</i>	<b>Internalizing spatial spillovers</b>
		<i>Coordination costs</i>	
<i>Strategic costs</i>			

**2. Equity**

Efficiency costs and benefits do not exhaust considerations relevant to decisions to create or maintain a specific special district. Potential for both equity and accountability within a planned or existing special district should influence the outcome. Two forms of equity figure commonly in discussions of governance arrangements. Each relates to a distinctive value criterion. The first, *fiscal equivalence*, explicitly supposes that it is *fair* that someone who pays for a good or service should receive benefits at least equal in value to the payment s/he makes. As Schroeder notes, two ethical corollaries follow. First, two persons who “derive similar benefits from a service should bear similar burdens for financing it” (17). Second, those who benefit more should pay more, while those who benefit less should pay less.

The second concept of equity in public services helps justify redistribution schemes by highlighting *ability to pay* considerations. Those less able to pay the full cost of services they enjoy should, by this second concept, pay less, while those better able to shoulder the burden of financing services should pay more (18).

As Schroeder notes, special districts offer relatively little advantage as tools for promoting *ability to pay* policies if tax payers are mobile. *Ceteris paribus*, if they can, better off residents will rationally move away from a special district that subsidizes those less able to pay for the service it provides to other jurisdictions less committed to achieving social equity through redistribution. This should enable them to protect their wealth against transfer policies. But many factors influence African household mobility decisions, e.g., (non-) availability of land outside their home villages. Thus many better off families may stay where they are and accept subsidization of their neighbors.<sup>10</sup>

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<sup>10</sup> Fass and Desloovre provide lively illustrations of this point concerning primary education services in Chad. Their 1994 study of autonomous provision of primary education by village communities in a state impoverished by on-going civil war, reveals that many Chadian communities had both the will and the means to subsidize education for children of poorer families. Who enjoys a surplus and who’s in trouble in any given year is common knowledge within the community, allowing village leaders to adjust fiscal pressure, family by family, on the basis of a broadly shared consensus about what is fair under prevailing circumstances. See also Schroeder: 18.

*Fiscal equivalence* can be achieved within RNRGM special districts, particularly if the district provides services on a fee basis.<sup>11</sup> Other things being equal, and if fee schedules are respected, those who benefit equally automatically pay the same amount in fees assessed, while those who benefit more pay more, those who benefit less, less. Accurate and transparent accounting procedures encourage this outcome; absent those, fiscal equivalence strategies may prove less effective. Information costs come into play here as well, and they will almost certainly be lower in smaller jurisdictions than in larger ones.

### 3. *Accountability*

The degree to which decisions made by special district officials reflect preferences of district members, as opposed to those of district officials, provides a measure of accountability. Power relationships and the degree to which officials, as agents, *depend* on their “principals” - district residents or members, in this case – or, vice versa, *dominate* them, sharply affect accountability within the district. The degree of accountability present in a special district reflects mechanisms available to principals to control and regulate the power of officials or, in the contrary case, principals’ lack of institutional tools and other mechanisms to induce officials to respond to their wishes. Concerning RNRGM special districts, a non-exhaustive list of such tools would include:

- regular terms of office, if elective
- selection of officials through fair voting procedures
- rotation of hereditary offices among families
- transparency arrangements, which go well beyond the stock “freedom of the press” list to include institutional design elements ensuring dissemination of accurate information among participants, e.g., open court proceedings, public reporting of results, monitoring mechanisms that ensure a role for all groups in the community, and rich local supplies of social capital to enhance transparency
- popular participation in decision-making as a “voice”<sup>12</sup> mechanism
- division of power and authority among officials
- responsiveness to principals’ local, *non-political* concerns rather than external agendas (as an example of the latter, national parties often try to mobilize supporters cheaply by politicizing non-political local organizations such as cooperatives, age grades, irrigation associations and the like)
- voting rules calculated to ensure effective representation of stakeholder preferences while discouraging elite domination
- threats to withhold services
- social pressures, e.g., refusal to provide labor on a rotating basis to those who shirk their reciprocal responsibilities

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<sup>11</sup> Swanson and Issaka: 129-53, annex, provide a detailed empirical illustration of workings of the fee for service principle in “Kore Mairoua: Sustainable Potable Water Management.” A community shifted from a water supply system based on private water carriers to one of metered standpipes, which resulted in marked improvement in water quality, substantially lower prices and much better coverage within the community (see *infra*). Another illustration of the power of that principle, based on a case involving potable water supply in a Haitian urban slum and orchestrated by the French non-governmental organization *Groupe de recherches et d’échanges techniques* (GRET), can be found in Smucker and Thomson: 36-39.

<sup>12</sup> Hirschman: 30-43.

- savings mechanisms that provide secure means to store cash resources.

If a special district, through design or happenstance, makes available to members as principals enough such tools, district officials as agents will likely find themselves constrained to serve the interests of their principals. On the other hand, designs that fail to take account of existing mechanisms and other factors such as levels of social capital present in the socio-political environments of specific special districts, may leave members of those districts, as principals, worse off. Special district officials, as their putative agents, may well then cede to the temptation to manipulate processes and outcomes to their advantage.

If enabling legislation permits, special districts offer the ability to *size the district to the contours of the problem*. Special districts can often better reflect perceptions and interests of those affected by a single service, or a single renewable resource. In general purpose governments, where boundaries usually reflect administrative or political considerations, non-congruence occurs regularly between jurisdictional boundaries and the contours of a specific renewable resource or service problem. The classic case here involves designating watercourses rather than ridge lines as jurisdictional boundaries. Governance and management of the watershed associated with any boundary line watercourse then *necessarily* requires coordination between at least two jurisdictions, if not among many. This drives up transactions costs of provision. A special district defined by the physical boundaries of a watershed offers distinctive advantages for governance and management of the resource by comparison with the general purpose districts.

Another critical issue contrasts the principle of subsidiarity with the special district principle of sizing the jurisdiction to the physical scope of the resource or service problem. A large forest may encompass multiple villages. To gain the advantages of greater accountability in woodstock governance and management, it may be appropriate to split the forest into several village-based jurisdictions. The fact that major forest-related resources are non-fugitive (trees, shrubs and grasses, mineral deposits, etc.) reinforces this point, even if other forest resources, such as wild birds and animals, do migrate in and out of the area. Difficult tradeoffs may arise when forests also serve as the headwaters of streams and rivers, or line the banks of watercourses. As noted, however, it may be appropriate to create a single special purpose government for closely linked renewables such as forests and watercourses, just as emergency services (police, fire, ambulances) may be economically grouped to meet common needs such as dispatching.

#### **D. Special Districts for RNRGM**

Let us now review several case studies of special districts focused on RNRGM to see what insights they provide in light of the criteria of efficiency, equity and accountability.

## ***1. Niger: Converting Common Pool to Common Property Forests<sup>13</sup> by Instituting Village-Based Special Districts for Woodstock Governance and Management***

The case here presented involves a significant number of village-based special districts for woodstock governance and management in Western Niger. The system was designed in 1987,<sup>14</sup> initiated around Niamey (Niger's capital city) in 1989, and extended in 1992-93 into the Torodi District, Say *Arrondissement*. Say lies southwest of Niamey across the Niger River. The Say region currently provides the bulk of fuelwood consumed in Niamey (Swanson and Issaka: 1-12). This system, based on special districts for woodstock governance, incorporates three inter-linked elements: access and use rules, organization of fuelwood supply chains and associated fiscal measures.

### *Uniform Official Use and Access Rules*

Issues involved in regulating access to and use of village woodstocks pose problems, but not insurmountable ones (Swanson and Issaka: 24; for a comparative example in Mali, just to the west, see Thomson and Coulibaly). The special districts in question are uniform<sup>15</sup> in design. All incorporate surveyed, enforceable boundaries of village lands (a benefit in and of itself, in terms of helping to reduce tenure conflicts with neighboring communities) and forest holdings. They formally prohibit outside firewood harvesters from exploiting wood on village lands, limit the number of villager harvesters, set harvesting quotas, establish "standard issue" market committees and otherwise regulate exploitation of the local woodstock in an effort to ensure sustainability of this increasingly lucrative resource. This brief description sums up the essence of the *official* – and to some extent *working* - rules and regulations governing access to the local woodstock and its use.<sup>16</sup> Note that their inability, at least officially, to formulate their own rules on these basic issues clearly limits the autonomy of these special districts.

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<sup>13</sup> This case description draws, except where otherwise noted, on the very thorough and detailed study prepared by Richard Swanson and Hassane Issaka, "Decentralized Natural Resource Management in the Republic of Niger: Final Report," "Case Study #1: Kankani Village Management of Fuelwood Markets," pp. 1-37, photo annexes.

<sup>14</sup> The present author participated, as institutional design specialist, in the World Bank mission that designed the *Niger Energie II* project. The system of special districts for village woodstock governance and management, here briefly described, had its genesis in this mission.

<sup>15</sup> This uniformity unfortunately fails to provide for the full range of producers' preferences. Nonetheless, to the Government of Niger's credit, the legislation it approved and promulgated deliberately incorporated a vague concept, "local organizational structure" (*structure locale de gestion*) to provide some flexibility. This intentional vagueness allows producers, at least in principle, to adopt a variety of organizational forms, e.g., local associations, cooperatives, etc. Cf. Swanson and Issaka: 12, fn. 11. The institutional design tradition within which World Bank technicians and Nigerien legislators operated in the early 1990s probably precluded greater flexibility in other design elements. Furthermore, special district members have unilaterally adjusted the officially prescribed rules to meet their own needs, e.g., by allowing members of extended families who reside in neighboring communities to harvest wood within their district, even though the formal rules explicitly prohibit this. See Swanson and Issaka: 13, bullet 1; 37.

<sup>16</sup> Working rules – how officials actually do (or don't) apply rules in practice, versus the formal stipulations incorporated in written official rules – do not conform fully in all woodstock special districts to official rules. The usual reasons associated with behavior categorized as "rent-seeking" explain these anomalies. Almost all involve individual incentives that private operators can employ to induce local and national

### *Fuelwood Supply Chains*

The second element concerns organization of the fuelwood economy and supply chain. Fuelwood marketing occurs at the village center. Locals control the market. Market masters conduct and record sales of local wood to firewood dealers. The latter send trucks to villages participating in the system to purchase wood for transshipment to the capital city, Niamey. There, the same dealers wholesale their product to retailers, who daily market a few pieces to individual households in their neighborhoods.

### *Fiscal Incentives to Orient Fuelwood Harvesting from Open Access to Common Property Special Districts*

The third design element incorporates significant tax incentives to encourage wholesalers to buy wood in the regulated markets associated with the special districts, rather than harvesting in areas not yet incorporated into the fuelwood management scheme. Nigerien legislators, under pressure from the World Bank, translated the public policy purpose underlying the original 1987 design into practice through *Ordonnance No. 92-037* of 21 August 1992.<sup>17</sup> This regulation creates several different fiscal incentive structures. First, it marginally encourages wood traders to reduce pressure on areas adjacent to the capital by imposing a fixed tax on wood gathered within 40 km (25 miles) of the capital. Traders pay 90% of that rate on wood collected in the 40-80 km zone, and 80% of that rate for fuelwood supplies gathered beyond 80 km (50 miles) (Swanson and Issaka: 13, Table 1).

Second, the regulation imposes a penalty tax on wood dealers who harvest in remaining open access areas (which still furnish 80-85% of fuelwood consumed in the capital). Traders pay roughly triple the tax on a standard unit of wood taken there compared to the amount they pay on wood harvested in special districts with *controlled* markets (where special district members have begun harvesting live trees in a regulated manner, as opposed to only collecting fallen timber). Traders pay only slightly more than the controlled market tax on wood harvested in special districts with *oriented* markets. Members in these districts are authorized to harvest only fallen timber because it is still abundant. When they exhaust fallen dead wood supplies, “oriented market” special districts will graduate to “controlled market” status (Swanson and Issaka: 22, Table 6).

To buttress this system, the fiscal regulations incorporated into the special district legislation provide for a complex division of the fuelwood tax among the national

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officials to make decisions and take actions which diverge from the prescribed norms. Cf. Swanson and Issaka: 19-20, 23, 35-37. Derek Van Marter, a Peace Corps Volunteer based near Birnin Konni, Niger, in the mid-1990s, noted serious breakdowns in enforcement of official environmental regulations as a direct consequence of fiscal problems in Niger during that period. Cash shortages at the state level resulted in significant salary arrears – on the order of six to eight months – for many civil servants, including foresters and gendarmes (Email message, 28 January 2000). Under such circumstances rent seeking often becomes the dominant mechanism enabling officials to ensure the survival of their families.

<sup>17</sup> “*Portant organisation de la commercialisation et du transport de bois dans les grandes agglomérations, et la fiscalité qui lui est applicable.* [“Providing for organization of the wood trade and transportation into major urban centers, and the fiscal rules pertaining thereto.”]” Cited in Swanson and Issaka: 12.

government, the “local” (district) government and the village special district. The national government claims 90% of the tax collected on wood harvested in unorganized (open access) areas, 50% of the amount on wood from *oriented market* special districts, and only 10% on wood from *controlled market* special districts. The county-level government receives, respectively, 10%, 20% and 40% of the total tax collected on wood harvested in these three different situations within its jurisdiction. Communities, depending on whether they are unorganized, or structured as one of the two types of special districts for fuelwood marketing, receive respectively 10%, 30% and 50% (Swanson and Issaka: 14, Table 2).

The national government should rationally oppose extension of the special district movement to unorganized areas because of the accompanying revenue loss. On the other hand, local government leaders (national civil servant administrators at the time these rules were promulgated, now increasingly elected officials) and communities get real tax benefits from higher levels of special district organization. While the amounts involved are not insignificant for the national government, they represent truly startling amounts of cash for impoverished local governments and communities (Swanson and Issaka: 21, Table 5; 27-28). The question still remains: have national government officials refused to extend the system because they fear resulting revenue losses in an era when state revenues are considered largely inadequate, or have fuelwood traders, by making rents “easy to find,” discouraged full application of the special district scheme?

#### *Costs and Benefits for Nigerien Villagers of Fuelwood Special Districts*

Why should rural residents respond positively to opportunities to create and run their own special districts? What, in other words, are the costs and benefits, from rural farmers’ perspectives, of substituting local for state control of woodstocks? Schroeder’s questions, as arrayed in Tables 1 and 2, above, can help with this analysis.

The present case suggests that economies of scale arguments are not compelling in terms of reducing transformation costs associated with production. Given the raw material (fallen dead wood scattered through a local forest), the unsophisticated technology (indigenous, hand-forged axes and animal traction carts) employed to harvest it, and labor surpluses in the local economy, it makes little sense to introduce more sophisticated, labor-saving technology. For working age males, finding gainful dry season employment in their home communities enables them to remain at home with their families rather than having to earn money by going on labor migrations that often last six months. Economies of scope through combining management of more than one RNR, e.g., woodstock and wildlife, by authorizing the same officials to deal with both, might offer some benefits in terms of reduced transaction costs associated with provision, but for the moment, the woodstock districts focuses exclusively on fuelwood.

For villagers, introducing at the village level special districts for woodstock management offers significant benefits in reduced provision transactions costs compared to the earlier system of national-level management conducted by members of Niger’s conservation agency. The new special district institutions have lowered information costs, coordination

costs and strategic costs. Those who live and work regularly in the village forest can monitor events there as a costless side product of their wood harvesting activities. Coordination costs may well plummet when resident villagers play the lead role in operating the special-district-based system of woodstock governance and management, as they did in this case.<sup>18</sup> While problems in controlling strategic behavior on the part of market masters do arise (Swanson and Issaka: 19-20), accountability mechanisms appear sufficiently robust to provide villagers adequate recourse.

## ***2. Mali: Reasserting Indigenous Special Districts for Woodstock Governance and Management***<sup>19</sup>

In the late 1980s and through the 1990s, villagers reasserted indigenous, village-based special districts for woodstock management within the boundaries of Kelka (Boré) Forest. This 45,000 Ha forest lies between the Bandiagara plateau and the Mopti-Douentza road in Mali's Fifth Region. Populated by 6,500 residents drawn from five ethnic groups (Fulbe, Dogon, Bambara, Soninke and Fulan Kraibe), 13 villages either lie entirely within or border on the forest. Each of these communities claims a part of the Kelka forest as its village territory. In the past, these communities organized their own rules governing access and use of the local woodstock. At the time, supply exceeded demand, so these rules were not elaborate. Then, as now, the forest met local needs for gathered foods, construction timbers, pasturage, etc. At present, in addition to these persistent uses, many villagers derive considerable income from the sale of Kelka firewood.

During most of the 19<sup>th</sup> Century, Fulbe pastoralists based in the pasture-rich Inner Delta of the Niger River dominated this area. Their cattle herds traversed the area twice annually, moving out through Kelka to wet season pastures to the south, and then back to the Inner Delta during the dry season (Diallo and Winter: 143).

Following establishment of the French colonial regime in the late 19<sup>th</sup> Century, and increasingly after Mali emerged as an independent state in 1960, the central government conservation agency tried to assert control over Kelka. Foresters under the independent regime undermined local rules, but never governed or managed the forest effectively. They did, however, extract considerable rents (Thomson and Coulibaly; Thomson, 1997).

During the interregnum after the fall of the authoritarian Traore government in March 1991, and facing a serious threat of over-exploitation by outside users, Kelka villages organized to reassert their earlier claims to the forest (Diallo and Winter: 147-53). Assisted by an international non-governmental organization, the Near East Foundation, communities revived and strengthened their former rules for woodstock governance and management, including a local enforcement system and sanctions for rule infractions.

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<sup>18</sup> This appears obvious in cohesive communities. For those ridden with factionalism, or for structural reasons less able to coordinate, the outcome is less clear.

<sup>19</sup> Materials for this case are derived principally from Diallo and Winter: 133-68 and secondarily from Thomson, 1997.

They also revived the old inter-village federation, complete with a system of semi-annual meetings to address problems related to forest governance and management.

Villagers now mobilize resources – particularly in the form of policing teams, but cash to some extent as well – and employ them effectively to regulate access and use. They operate with considerable independence from community general purpose governments. Although these village-level special districts have not achieved official recognition as governmental jurisdictions, the Malian government does treat them as associations. More importantly, the Malian government, through a decision of the Douentza *arrondissement* development committee, officially recognized the authority of the federation member associations to govern and manage Kelka forest (Diallo and Winter: 147).

In general Kelka rules seek to control access to the village forest and its resources (firewood, building materials, pasture, fruits, etc.) and to harvesting. The goal in each case is to ensure resource sustainability and ensure that villagers retain control over resource flows the forest produces. Some of these systems show real sophistication and function effectively (Thomson, 1997, analyzes the architecture of woodstock governance and management rules in Tibouki, one of three Kelka villages whose residents depend most heavily on the forest for income supplements through firewood sales).

The 13 villages also federated their local special districts. The federation resolves woodstock-related conflicts not settled at the village level. Several of these have involved action claims by a resident of one Kelka village to the woodstock of another. Federation dispute settlement functions effectively (Diallo and Winter: 155-64).

#### *Costs and Benefits for Kelka Villagers of Special Districts for Forest Governance and Management*

As in the Nigerien fuelwood districts, *economies of scale* have little place in an activity – fuelwood harvesting and sale – based on low-level technology in a labor-rich economy. *Economies of scope*, however, can be considered of some significance: the policing systems that residents of Kelka communities have mounted serve to control access to other forest products, such as fruits and pasturage, in addition to fuelwood.

The system has markedly reduced coordination costs of negotiating agreements by effectively removing state agents from the process. The latter have little incentive to facilitate local action since it reduces their rent collection opportunities. Information costs have fallen in large part because foresters have relinquished woodstock policing to the Kelka communities concerned. Since villagers can now enforce sanctions, it makes sense for residents to co-police. People report infractions to village woodstock monitors, improving chances that infractions will in fact be punished, and in ways that residents (as well as many culprits) consider legitimate. The attractiveness of illegal harvesting strategies quickly fades (cf. Thomson 1997: 103). As controls over access to and use of the local woodstock become more reliable, prospects for sustainability rise.



Both fiscal equity and accountability have improved under village management. Those who invest in sustaining the woodstock, because in one or more ways it supports their production systems or quality of life, now believe they will harvest benefits of their investments in stewardship. One might even argue that local controls within these de jure special districts have stemmed a form of negative redistribution. Under the new special district arrangements, outside wood traders who formerly ran rip and run operations to their short-term profit and the community's detriment, can no longer harvest locally. Village residents capture all value adding associated with cutting and bulking firewood.

### *3. Niger Again: Village Potable Water Supply*

This case illustrates the value of special districts in providing a framework for provision and production of potable water, a renewable resource even more critical than usual in desert edge communities. In most such communities in West Africa, people still dig shallow open wells in valley bottoms from which they draw water for all household uses as well as for livestock. Often water carriers supply households wealthy enough to pay for the service. Others have to rely on family members to draw and transport water for their needs. The water is generally expensive, either in cash or in time and labor terms, and of poor quality because of well edge pollution (livestock urinating and defecating, polluted sand pulled into the well as the rope slides in over the side, etc.). These wells also frequently fail during the latter part of the dry season, occasioning even higher costs to supply households since water must be transported from more distant perennial wells.

Water supply usually ranks as the most salient issue in most sahelian communities, at least until satisfactorily solved. Public and non-governmental development assistance agencies, as well as national governments, devote great effort and money to identifying and tapping safe, perennial water supplies, often through wide bore wells, sometimes through boreholes. The following case reveals the potential for effective governance and management of a local potable water supply system through special district arrangements.

The small rural town of Kore Mairoua lies in southwestern Niger on the road connecting the small urban center of Dogondoutchi to Dosso, the departmental capital (Swanson and Issaka: 129-51). In 1987 external assistance financed creation in Dosso Department of local water systems in a number of communities. Most extract water via diesel- or solar-powered boreholes that tap reliable aquifers. Pumps lift water into small water towers, from which it is piped to public fountains distributed throughout the community.

Non-local technicians in 1991, after two years' work, finished Kore Mairoua's town water supply system. It has 12 fountains. Two served initially as stock watering points. Two others supplied the local dispensary and the town chief's private residence. In 1991 no community residence lay more than 500 meters from a fountain. The stock watering points were closed after a year because "people refused to pay the fees" (Swanson and Issaka: 136). It proved too difficult to control access to the dispensary fountain, which initially provided water free as a public service. Because people exploited the system by claiming they were sick to get water for nothing, it too was closed.

Technicians from the national water company office in Dogondoutchi proposed an institutional framework for the local potable water supply special district. With some guidance from the technicians (key elements of which they ignored), Kore Mairoua residents have established a fee for service system, set prices, developed their own operational rules, and appointed a staff to sell water and apply the rules. Leaders of the special district monitor operations daily, handle funds and keep the books.

Kore Mairoua residents selected members of the water committee, including the village chief as president, overriding the technicians explicit.<sup>20</sup> They also failed to place any women on the committee. Still members have established a sterling record as collective fiduciary for the town's interests. Several factors explain their success:

- proper and adequate training in system maintenance and accounting practices that enable meaningful audits, decreasing staff temptations to embezzle or otherwise illegally appropriate proceeds of water sales
- well adapted system of rules governing sales and money management
- local pride that encourages and honors people who make sacrifices for the public good e.g., working for salaries smaller than they could otherwise earn
- many business people who know sustainability depends on proper management
- well-respected village chief whose decisions people support and follow
- initially intense, and then periodic supervision of water system operations by the national water company technicians in Dogondoutchi
- co-management by the village water committee and outside technicians to forestall using water fees for other, less productive ends; and
- national enabling legislation that, ex post facto, provided for the Kore Mairoua water system (along with many others) a form of special district legal framework.

Residents of each of the town's quarters selected an individual to operate the metered tap at the neighborhood fountain. People uniformly chose older women for these posts. They charge the fixed service fee (25 FCFA, or slightly less than five U.S. cents, for any size container of water up to 20 liters). This fee covers all operational and sinking fund costs, as well as modest remuneration for system staff. Each morning each fountain operator pays the water committee secretary for water consumed the day before. Fountain operators pay a wholesale rate of 250 FCFA (roughly \$.40)/cubic meter sold. Since some people use containers smaller than 20 liters, through careful management an operator can earn a small daily profit. In some cases this amount equals the daily salary.

Occasionally a fountain operator will not fully pay for the previous day's water consumption. So long as such amounts do not exceed her monthly salary, the treasurer simply deducts them as an advance against salary. Only one woman consistently fell behind in her payments. Eventually the water committee replaced her. The original fountain operators, excepting the two who died, remain at their posts.

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<sup>20</sup> Swanson and Issaka: 137, fn. 9, note that experience reveals that men, including village chiefs, often make poor managers. If appointed to a town water committee they often divert money from receipts for their own ends. Such behavior is, at least in Nigerien Hausa culture, extremely widespread. Exceptions do exist, however, and the Kore Mai Roua chief must be counted among them.

Two local mechanics maintain the pump and fountain. On the outside technicians' recommendation, the district runs a fully successful sinking fund. Officers purchased a new replacement diesel generator a year before the original one was to reach its projected useful life. The mechanics maintain the original so assiduously that it may well outlast its rated life. In the meantime, when it breaks down and must be repaired, the town water committee no longer have to rent a replacement generator because they already have their own on site. They also replaced the pump, situated in the borehole, when it burned out.

Fees charged, while but a seventh of the former cost of water,<sup>21</sup> finance the salaries of system personnel, the sinking fund for replacement equipment, and a growing bank account. Accounts are publicized monthly in an open meeting.

This system was designed to operate in a highly autonomous manner. Nonetheless state water company technicians provide occasional supervision. The technicians also trained several mechanics in Dogondoutchi to a higher standard so they can carry out generator repairs that exceed village mechanics' skills. The initial agreement between the state water company and villagers on funding the system – in which all adults participated through a special levy – stipulated that any financial surpluses must be used to maintain the existing system or possibly extend it. Water sales, even at the reduced fees charged, produce such a surplus that Kore Mairoua's system has become, in effect, too successful. To overcome this constitutional limitation and utilize some of the surplus for other public purposes, villagers have been lobbying the state for a change in allocation rules.

We turn now to the advantages and disadvantages of this special purpose district. Installation of the public water system has in fact reduced production transformation costs because of the economies of scale. On the other hand, the shift from purely private to a mixed public/private system has increased production transaction costs because of the need to coordinate behavior and track sales on a daily basis. This involves daily monitoring of meters at all system fountains, as well as bookkeeping and occasional transfer of funds to a postal account in a neighboring town.

Provision transaction costs rose, at least as far as information and negotiation costs are concerned. One-time negotiations about establishing the system, on-going reporting at monthly public meetings, time devoted to resolution of the occasional dispute, and quarterly interfacing with representatives of the national water company all require time and efforts. On the other hand, the simple but robust system design reduces to a minimum the leeway for strategic behavior: fee for service, careful accounting and high degrees of transparency render free-riding and shirking unlikely.

Kore Mairoua's water system has clearly achieved fiscal equity since, like the former open-well system, it depends entirely on fee for service. A very significant side benefit of

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<sup>21</sup> Swanson and Issaka: 143. The savings are somewhat less dramatic than this statement implies because families now often substitute their labor for that of water carriers. For those who still purchase their water from carriers, the price has fallen only by a third. The quality has, however, risen dramatically. And as the fountains are now much closer to many dwellings, younger people can now supply their own families.

this arrangement, difficult to overstate, is the vastly improved *quality* of drinking water now available in the town. The second side benefit is the *quantity* of water available. Because the system taps two much deeper aquifers, water remains abundant through the worst part of the dry season, sparing families investing excessive resources in acquiring bare survival levels of water at that period during the year.

Accountability, finally, appears much higher than in external national technical agencies alone. Water committee members reside in the town, and must report on system performance monthly. They are accessible to all, including local business people who, as a sort of informal local oversight committee, use their business acumen to keep the system on track. Water officials know that rent seeking, embezzlement and other forms of illegal behavior would be quickly discovered, which make them less attractive.

#### ***4. Senegal: Governing In-Shore Fisheries<sup>22</sup>***

The fishers of Kayar, 30 miles north of Dakar, Senegal on the west coast of Africa, have exploited a rich artisan fisheries since 1870. This fisheries provides a wealth of pelagic (open seas) species as well as high value, demersal (bottom-dwelling) coastal species. During Kayar's 1995 main fishing season (November-June) some 4,000 fishers operated 700 small and large motorized pirogues, producing a catch valued at \$5,000,000. In present-day Senegal average revenue of \$1,250/per fisher amounts to big money. But demand for demersal fish has gradually caught up with supply, leading to conflicts.

Organization of fisheries governance intersects with the fish marketing system repeatedly. Fishers' wives and male relatives dominate dockside purchases from Kayar fishers, and also initial processing. Women show their husbands no mercy, as personal earnings are not pooled in a family budget. Women resell mainly to wholesalers in the Kayar market, who in turn resell fish in three distinct markets. Traders from interior towns buy the low value bulk of the catch and ship it inland for resale to wholesalers and retailers. Other traders ship low-value, smoked and salted fish to Burkina Faso, Benin and Togo. A third set of traders buy the high value demersal species (sole, *thiof*, red mullet, etc.) as intermediaries for the Dakar enterprises that supply European markets.

The first settlers in Kayar came as Lebou farmers and part-time fishers in 1870. They remained agro-fishers until 1940, when most converted to full-time fishing. The Guet-Ndariens, a group of transhumant fishers based further up the coast at St. Louis (at the mouth of the Senegal River), have also long exploited the Kayar fisheries. When the latter arrived is uncertain, but certainly by the 1950s.

Fishermen use four major types of fishing gear in Kayar. Many Kayarois fish for demersal species among the rocks found in coastal waters. They use both *hand lines* and *trot lines*, the latter anchored in in-shore waters from one night to two full days. The former rig produces the freshest, highest value fish, suitable for shipment to Europe. Trot lines have two disadvantages. First, fish taken do not meet standards of freshness required for exportation and so go to less lucrative, internal or other African markets.

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<sup>22</sup> Material for this case study comes exclusively from Oumar Kane et Mike Winter: 13-55.

Second, trot lines sometimes break. Fish hooked on the submerged portion die, rot and disintegrate, polluting the fishing grounds and driving away live stocks. The two line fishing methods require comparatively little effort, but do not produce much profit either.

Guet-Ndariens and some Kayarois use two types of nets: bottom nets and purse seines. The former are set and left, again for a night to two full days, for demersal species. Bottom net catches do not meet European freshness standards, even though the fish are high value species (sole, etc.). Purse seiners, the only ones who work two pirogues in tandem, pursue low-value pelagic species for resale in Senegalese interior markets. They earn the most because of the large volume of fish harvested. The bottom drop net requires only moderate effort and produces reasonable profits.

Fishers govern and manage their fisheries through four institutions, three local in origin. The national government officially views the Kayar fisheries as quasi-special district. Fisheries agency personnel work with artisan fishers to defend the entire Kayar fisheries from incursions by high-seas trawlers into the six-mile-wide coastal waters reserved for artisan fishers. Fishers created two nested special districts therein, organized around natural and artificial divisions within the fisheries. Local indigenous leaders – the chief and notables of Kayar – staff of the national fisheries agency, gendarmes posted to Kayar, and occasionally, national administrators within whose jurisdiction Kayar lies, backstop the fishermen's common property special districts for enforcement and dispute resolution purposes. In 1994 economic pressures led fishers to organize a fishermen's union. This body restricted market supply to drive up the price, in the process reducing pressure on the fisheries and contributing to its sustainability. The two indigenous special districts and the union constitute local efforts at problem solving.

In 1961, before fishing demand began to pressure Kayar stocks, Kayarois and Guet-Ndariens came into conflict. The latter adopted bottom nets in that year, and spread them on the same rocky in-shore grounds where the Kayarois hand-lined for all the high value fish species. Bottom nets fouled hand lines. Two years later the Senegalese state, through the national fisheries agency, tried in vain to establish separate zones for the two techniques. In the meantime, the two communities smoothed over the conflict, but disputes continued, finally erupting 25 years later in open warfare characterized by net destruction, acts of arson targeting pirogues and homes, and pitched battles leading to severe bodily harm. Four years of effort, initiated by local traditional authorities and religious leaders, later backed by administrative officials from the Thiès and St. Louis Regions, and national fisheries agency representatives, produced a solution. In 1990, fishers founded the Kayar/St. Louis Solidarity Committee (KSLSC). They successfully divided the coastal fisheries, with hand lines authorized along a 25 km stretch north and south of Kayar. Bottom nets could be employed legally only north and south of the hand line zone, end points of which are marked by buoys.

The KSLSC organized a surveillance committee, composed of two Kayarois, two Guet-Ndariens, the local head of the national fisheries agency and a gendarme. This committee relies heavily on co-policing by fishers. When the latter – typically hand liners - discover a bottom net in the hand line zone (and if they don't simply pull it in and steal it) they

inform KSLSC officials, who dispatch the surveillance committee. The latter recover the net and either expropriate or destroy it. Committee members fine owners of illegal nets, when they can identify them, 50,000 F CFA<sup>23</sup> (roughly \$80 US).

Several other fundamental rules arose directly after the 1994 devaluation of the local currency when, curiously, high-value fish prices collapsed. The CFA franc, pegged for decades to the French franc at the rate of 50 to 1, lost half its value, to 100 to 1. Instead of the F CFA export price for fish doubling, it plummeted to 700F CFA/freezer chest of fish, or about one-tenth of the economically feasible rate. This appears to have been a pricing action coordinated among fish buyers (that is, fishermen's spouses and other relatives). Faced with the prospect of economic disaster, and backed by the national fisheries agency representative at Kayar, fishermen organized a union, the *Comité de Pêche de Cayar* (CPC). The leadership declared a three-day ban on fishing, which set the stage for discussions with local buyers and representatives of Dakar middlemen leading to a negotiated price of 8,000F CFA/freezer chest.

The CPC then moved, after thorough discussions with its member fishermen, to consolidate CPC collective economic power by limiting hand liners to two chests of fish/day/pirogue. The CPC varies this rule when conditions demand (periods of abundance of certain stocks with stable prices, poor fishing conditions during the rainy season, occasional ad hoc lack of demand for European exports). After the first season of catch limits, some fishermen wanted to return to the no limit rule, but the majority supported the new arrangement: experience demonstrated that the new market restrictions maintained fishers' revenues effectively.

The CPC employs the same limitations whenever buyers refuse to respect the negotiated price, a frequent occurrence. CPC officials monitor dockside markets, but also rely on fishers to inform them when buyers refuse to pay the negotiated price. They then either declare a temporary "no chest" strike rule – very expensive for the fishermen – or they order fishers not to ice their catch of high value fish. This latter action ruins the fish for European export, punishing the Dakar intermediaries, without limiting sale of the same fish for domestic consumption. Fishers' revenues suffer during these partial strikes, but not as much as during full bans on deliveries. CPC successes in the face of buyers' repeated pricing tests has further consolidated the Committee's authority.

The CPC, rather than the KSLSC, intervened when, in 1995, some Kayarois fishermen introduced trot lines (150 meters in length, fitted with hundreds of hooks) into the 25-kilometer hand lining zone. Hand liners contested the trot lines for the same reason they opposed the bottom nets. The CPC, with the backing of the Kayar chief (but not the local representative of the fisheries agency), banned the trot lines to the bottom netting zones.

Fishermen co-police these measures with the CPC's own non-formal "red badge" police. Two witnesses must observe a violation, which is punishable by a fine of 30,000 CFA (\$50 US). Sixty such fines were levied in a little more than two years from 1994-96, or

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<sup>23</sup> The US dollar/F CFA varies as a function of the US dollar/French franc, to the latter of which the CFA franc is pegged. An average conversion rate for the period in question was \$1/600 F CFA.

roughly 25/year. Some violators initially refused the authority of the fisher police, but the latter took some of them before the Kayar chief sitting as head judge of the local moot, and others before the local representative of the national fisheries agencies sitting as an administrative judge. Both instances upheld the CPC fines. The CPC and its police force gained sharply in credibility as a result of these legal victories.

By contrast, regulation of the open sea area of the six-nautical-mile coastal zone artisan fisheries, where purse seiners fish, comes under the authority of the KSLSC. The total of purse seiners increased from four in 1976, when Kayar fishers first adopted seines, to 60 in 1996. Fishing effort correspondingly increased, pushing supply up and prices down. Again with an eye to limiting supply and maintaining prices, KSLSC leaders decided in 1993 after extensive consultation with members to restrict purse seiners to a single daily outing. The measure prevents gluts on the local market. Co-policing works well, so few purse seiners violate this rule. Only two have been caught since 1993 – and fined 50,000 CFA (US \$80+) each – in large part because seiners voluntarily respect the measure.

The final rule limiting fishing in the zone derives from the latest (1987) version of the Senegalese fisheries code (Kane and Winter: 42, fn. 12). Industrial fishing boats cannot fish six nautical miles limit. Until 1992, the Senegalese navy enforced the rule, but without much success for lack of detection equipment. But a radar unit installed at Kayar in 1992 made detection much more certain. Enforcement remains less effective than it should be, as the navy no longer patrols the area. National fisheries service officials at Kayar rely on renting local fishers' pirogues to transport them onto the high seas to arrest intruders. Of five trawlers the radar unit detected in 1995 inside the six-mile limit, two escaped before an officer could make an arrest, two proved false alarms, and one was taken. The owner paid a fine of more than \$6,300 to reclaim his equipment.

A final important element of this case concerns the non-formal fiscal systems established by both the CPC and the CSKSL. The former, with membership consent, assesses during the eight-month-long major fishing season, a daily "user's fee" of 100 F CFA per hand lining pirogue. This doubles as an insurance premium. In 1995 the fee produced 9,000,000 F CFA (\$15,000), not an enormous sum but sufficient to finance pirogue and motor repairs, and social security payments for fishers who encounter accidents. CPC officers publicly report amounts in this account and expenditures. CSKSL collects annual membership fees: 2,500 F CFA for officers (who work gratis), 500 F CFA for members, 5,000 F CFA for purse and bottom nets, and 1,000 F CFA for hand lining pirogues.

This case illustrates limited but productive collaboration between state fisheries technicians and national police, on the one hand, and fishers, and local traditional leaders on the other. It exemplifies intelligent use of the principle of subsidiarity. Kayar fishers show substantial capacity for self-governance, punctuated by periods of uncontrolled conflict. In these periods, relatively rare in fact, they have been able to obtain necessary back-up from overlapping institutions at the village, regional and national levels.

The state correctly views artisan fisheries in Senegal as a key part of the national economy (only two percent of gross domestic product, but 25% of exports). To

strengthen this sector, they have established an official zone of coastal waters protected from industrial trawlers, and then for the most part allowed fishers to govern themselves. Conflicts that cannot be resolved within the fisher community can be appealed to a variety of fora, including most prominently the Kayar chief and the local representative of the national fisheries agency. Officials of the two fisher organizations that operate the special districts governing and managing Kayar coastal fisheries answer to their members. Officials can and do make rules and raise revenue. They first get a consensus on rules governing harvesting of fish. Once a rule is set special district officials, aided by co-policing members, reliably exercise their powers to ensure that everyone respects it. These systems of self-governance and co-policing both radically lower state involvement and costs in regulating a productive sector, and enhance the efficiency of rule enforcement by relying on the active support of all participants.

In terms of Schroeder's criteria for evaluating the efficiency, equity and accountability of special districts, the Kayar case represents a high standard of efficiency. Regulation of fisheries cannot reasonably be combined with other activities. The two overlapping fisheries special districts attain fiscal equity in apportioning user and licensing fees among members of the districts, but they also achieve at least a minor amount of distributional equity through the CPC insurance program. Officials are highly accountable to the membership, practice transparency, and regularly run for office.

## **E. CONCLUSIONS**

The four cases suggest that special districts could well prove useful in French-tradition West African states if decision makers decided to utilize them more widely and systematically. Efficiency, accountability and equity served as key criteria for assessing the performance, potential advantages and disadvantages of special districts. The case studies concern three types of RNR – woodstocks, fisheries and potable water supply – the last of which could also be considered a public service.

Production transaction costs in the two woodstock cases, as well as in the fisheries example, do not offer particular economies of scale. The simple technologies require many workers, whether the special district is large or small. Upgrading the technologies would simply eliminate jobs in what are already labor surplus economies. The potable water supply case does demonstrate, however, that economies of scale can be achieved by moving from individual to collective production of water and, in the process, a stunning increase in the quality of the product delivered, particularly during the dry season. On balance, economies of scale are likely to be less important where individuals or very small teams (of fishers, woodcutters) can, with simple equipment, transform resources into marketable products.

Community- or user-based special districts appear to offer, across all four examples, real advantages in reducing transactions costs associated with provision, at least in comparison with state- or even commune-based alternatives. Breaking large-scale, complex problems down into simpler, community- or user group-based elements reduces



transactions costs involved in obtaining indispensable information, ensuring appropriate coordination, and rendering strategic behavior less tempting.

Special districts should reduce *transactions costs of providing effective RNRGM*. *Information costs* within village communities will be relatively low. Local people who specialize in certain economic endeavors, e.g., fishing, firewood harvesting, hunting, or farming within watersheds prone to erosion, usually possess rich time and place information about how the resources they use respond to varying conditions. They are unlikely to make mistakes in designing and implementing RNR governance and management systems for the resources in whose use they specialize. Through their interactions with the resource they obtain relatively regular feedback about its condition. These users frequently compete with each other for the resource in question, but most also have a long-term view of their self interest in ensuring resource sustainability since it contributes significantly to their economic well being.

*Coordination costs* within such groups tend to be lower because of their shared interest in sustainability. This facilitates negotiating agreements that those affected perceive as legitimate. Users' regular and active involvement in harvesting the renewable resource facilitates monitoring and policing because users within these systems tend to engage in co-policing. If disputes about rules can be heard and processed at least in the first instance within the community, transaction costs of enforcement shrink dramatically, simultaneously increasing the likelihood that users will insist on prosecution of offenders even in relatively low-level cases of violation. Illegally lopping a few branches off a tree will unlikely lead to prosecution if the case has to be taken before a distant forester for resolution, but if local monitors can deal with the infraction before a local moot, probabilities of effective prosecution rise substantially.

*Strategic costs* fall with more effective monitoring and prosecution. Increasing probabilities of getting caught make violating special district regulations much less tempting. Those who use the resource and co-police community-based resource rules will usually have far more thorough knowledge of local legal and illegal use patterns than will outside monitors, whether employed by a national agency or a 20- to 70-village commune. Local monitors and patrol members, moreover, often have less opportunity to abuse their powers than do outsiders. The latter can propose corrupt deals to settle infractions when they catch users engaging in illegal harvesting, and profit thereby.

Local special districts for governance and management of renewable natural resources should enhance *accountability* as well. Village-level tyrants do exist and sometimes capture control of resources. But proximity mitigates against them extending their authority and control over resources to the same extent that officials of a multi-village communal government might. The latter, who will predictably confront severe fiscal problems, face temptations to "raid" renewable resources that member villages of the commune may well consider theirs as these resources exist on lands they claim. Villagers will have difficulty preventing utilization of these resources since, in most French-tradition West African countries, the commune will enjoy official authority over renewable resources within its territory not claimed by the national government.

Community-based or other small-scale special districts can enhance equity considerably, while simultaneously encouraging resource sustainability. In both the forest and the fisheries cases, outsiders using more efficient technologies under open access property arrangements can and have in the past exploited local resources stocks on a “rip and run” basis. They harvest wood or fish to the point of endangering resource sustainability and then, without bearing any of the costs involved in regeneration, move on to another open access areas to strip those in the same fashion. Instituting local-level special districts provides some measure of defense against these tactics.

In the Niger and Malian forestry cases, local users invest effort in regulating access and ensuring sustainability, if only by protecting natural regeneration. In Niger, villagers who exploit woodstocks within their fuelwood special districts, devote special effort to preventing exploitation of areas that have been previously harvested until such time as they have regenerated. The fiscal arrangements ensure that market personnel are paid for their management activities, which are indispensable to preserving the resource. The Kayar fishers, in like manner, invest effort in protecting their fisheries from illegal harvesting by both fellow artisan fishers as well as industrial fishing boats. Furthermore, fishers, boat captains and net owners pay various fees for the privilege of fishing. These taxes finance collective management of the fisheries. These amount to fees for access (clearly different from fees for service) but they ensure a degree of equity prevails in access to the fisheries resource.

These observations, and the case studies that underlie them, suggest that governments in the French-tradition countries of West Africa could render their citizens a signal service and gain much credibility by authorizing enabling legislation for local-level special districts and then assisting citizens to avail themselves of such institutional facilities. This policy suggestion would very likely encounter resistance among many francophone West African elites because implementation implies further devolution, and a probable loss of rents. But the transfer of power and authority would probably impress renewable resource users more than the laws creating communes because it would put within their reach an institutional arrangement that many would find immediately useful. In Madagascar, such a reform has been approved, although it has not to date been much tested in practice (Thomson, Pimentel, Guevara and Rojas).

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