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Governing the water user: experiences from Mexico

Edwin Rap^a and Philippus Wester ^{b,c}

^aDepartment of Integrated Water Systems and Governance, IHE-Delft Institute for Water Education, Delft, The Netherlands;

^bInternational Centre for Integrated Mountain Development (ICIMOD), Kathmandu, Nepal; ^cWater Resources Management Group, Wageningen University, Wageningen, The Netherlands

ABSTRACT

This article traces a policy shift that makes the ‘water user’ the main subject of water governance. From a Foucauldian perspective on governmentality these new subjectivities accompany neo-liberal governmental technologies to devolve autonomy from state institutions to an active user base, whilst retaining some ‘control at a distance’. The expectation is that individual subjects will incorporate control mechanisms and internalize norms and that this leads to new publicly auditable forms of self-regulation. The article questions the underlying assumption that policy necessarily accomplishes its strategic effects through governmentality. For this purpose, it draws on an ethnographic case study of how policy produced a new power/knowledge regime and how different societal actors and ‘user’ groups responded to that. The study specifically investigates the Mexican policy of irrigation management transfer during the 1990s, by which government transferred the public control over irrigation districts to locally organized water users’ associations (WUAs). The article argues that governmental technologies make and govern the ‘water user’ by discursively and materially constituting an organizational arrangement for user management (WUA), more than by directly acting on individuals’ self-regulated conduct. The analysis contributes to a broader reflection on the role of power/knowledge in natural resources management and decentralized resources governance.

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1. Introduction

This article traces a policy shift, namely irrigation management transfer (IMT) in Mexico, that set out to make the ‘water user’ the main subject of water governance. The shift entailed changes in the power/knowledge regime that built a new institutional, organizational and a technological infrastructure for governing water resources. Both the discursive and material play a role in how policies reorder different ways of constructing this user. From a Foucauldian perspective of governmentality these new conceptualizations of the water user accompany neo-liberal governmental technologies to devolve autonomy from state institutions to an active user base, whilst retaining some form of ‘control at a distance’ over the actions of individuals, organizations and societal domains (as originally shown by Miller & Rose, 1992). This ‘regulated freedom’ uses the subject’s capacity for agency to secure governmental ends (McKee, 2009; Rose, 1999). The expectation is that individual subjects will incorporate control mechanisms and internalize norms in their daily work and that this leads to new publicly auditable forms of self-regulation.

The article investigates the neo-liberal policy shift that occurred in Mexico at the end of 1980s, where the government started to transfer the public control over irrigation districts (IDs) to locally organized water users’ associations (WUAs). The government reorganized irrigation management by shifting from land-based to water-based beneficiary categories and fee-paying user identities. The Mexican policy of IMT became

widely propagated as a success and a model for other countries seeking to improve the performance of their irrigation systems and cut public expenditures (Gorritz, Subramanian, & Simas, 1995; Rap, 2006; Rap & Wester, 2013).

The policy shift in question indicates that a power/knowledge regime shaped water user subjectivities in interaction with how different social groups responded to and appropriated that concept. This article makes a contribution to theory by arguing that governmental technologies make and govern the 'water user' by discursively and materially constituting an organizational arrangement for user management (WUA), more than by directly acting on individuals' self-regulated conduct. This points to the need to not automatically assume that instrumental policy effects will occur through governmental technologies and reshape the subject according to Foucault's concepts of self-disciplining and self-normalization. Further, these governmental technologies do not produce uniform results but differential responses under various conditions.

Methodologically, this research started with finding out 'what happened and why' through detailed ethnographies of local political histories of transfer in two IDs, El Grullo and the Left Bank of the Santiago River, in Western Mexico, plus visiting numerous other IDs in Western and Central Mexico (Rap, 2004, 2007). To understand what authorities planned, how this constituted and responded to water user groups, we secondly reconstructed the IMT policy discourse and its trajectory over several decades (Rap, 2006; Rap & Wester, 2013). For this purpose, we interviewed some 20 members of the upper reaches of the hydraulic and agricultural bureaucracy and other key political figures in the Mexican government, as well as staff of international organizations. To place this into the wider Mexican political economy and historical context, we thirdly interviewed Mexican water scholars and carried out an extensive review of policy documents and newspaper articles (see Rap & Wester, 2013; Rap, Wester, & Pérez Prado, 2004; Wester, Rap, & Vargas-Velázquez, 2009). These three methodological entrance points to the study of this particular IMT policy started to interconnect in surprising ways.

The following section presents the theoretical framework relevant for this article, focussing on governmentality and the need to incorporate ethnography. Section 3 introduces the IMT policy in Mexico from which the case material stems. In Section 4, we present empirical data on how governmental technologies work in practice. Finally, Section 5 presents an analytical synthesis that relates the findings to governance in natural resources management (NRM) and several conclusions that follow from this research.

2. Theory

Foucault demonstrated throughout his work how power and knowledge over time became increasingly intertwined and mutually constitutive in the governing of European societies. Although most of Foucault's work was historical in nature, his theoretical approach is relevant to grasp contemporary shifts in state-society relations. For instance, a focus on how power/knowledge configurations frame 'NRM' or more specifically 'water management' as 'sectors' and simultaneously make human beings into 'resource – or water users' to become governable subjects in such fields (Taylor, 2011). This helps to understand how power allows actors to 'generate "knowledge" and impose their frames, interpretations and ways of working on others' (Hillier, 2015, p. 170). Power produces particular 'truths' through the neutral, objective and rational language of science that disguises its own working and silences and obscures other marginalized perspectives (Kooij, 2015).

Central to Foucault's thinking on power/knowledge was the idea of governmentality: '... a type of power which both acts *on* and *through* the agency and subjectivity of individuals as ethically free and rational subjects' (Shore & Wright, 1997, p. 6). He describes the emergence of this form of power that is no longer simply coercive and exercised by the central state, but rather through 'an assemblage of apparatuses which enable a mode of self-government' (Cannizzo, 2015, p. 201). The main point is that this is a productive power, which creates subjects, actors and objects, such as healthy citizens, efficient organizations and productive infrastructure. Within this thinking the 'art of governing' and the role of expertise has become the 'conduct of conduct', which is 'the attempt to shape human conduct by calculated means' (Li, 2007, p. 5) to achieve such desirable collective goods as health, happiness, wealth and security of 'the population'.

Following Foucault, Rose (1996, p. 12) views governmentality as ‘the more or less rationalized programmes, strategies and tactics for acting upon the actions of others, in order to achieve certain ends’. He analyses governmentality in two ways: first, in terms of political rationalities, which are the changing discursive fields conceptualizing political power and spelling out ‘justifications, appropriate forms, objects, tasks and limits’. Second, in terms of governmental technologies, which are ‘the complex of mundane programmes, calculations, techniques, apparatuses, documents and procedures through which authorities seek to embody and give effect to governmental ambitions’. For example, Miller and Rose (1992) show how contemporary calculative practices or technologies of government enable neo-liberal efforts to autonomize state institutions from direct control and responsibility over the actions of individuals, organizations and societal domains, whilst retaining some form of ‘action or control at a distance’. Law and Akrich (1994) illustrate this with the example of how the introduction of accountancy reshapes, visualizes and governs organizational spaces. Such new technological practices lead to engineering the ‘good customer’, a docile and disciplined user who is willing to pay a certain fee in exchange for a specified service.

In this framework, governmental technologies work to inculcate new norms and values, and thus ‘transform the conduct of organisations and individuals in their capacity as “self-actualizing” agents’ (Miller & Rose, 1992, p. 1). Emphasis lies on normalizing technologies of ‘the self’ through which subjects govern and monitor themselves. This perspective on the ‘art of self-government’ (Burchell, Gordon, & Miller, 1991) highlights the shaping and voluntary reproduction of everyday routines and behavioural habits through which subjects analyse themselves as objects of a certain knowledge and are made into subjects of power. Subjects even ‘develop desire and agency in continuous interaction with their peers and role models’ (Li, 2007, p. 13). Governments through their public policies act on the actions of subjects and the individual’s sense of self and thereby objectify the subject (Van Assche, Beunen, & Duineveld, 2014). They engineer and promote new forms of conduct that individuals adopt and internalize (Shore & Wright, 1997). The expectation is that individuals will incorporate control mechanisms and internalize these norms and values in their daily work and that this leads to new publicly auditable forms of self-regulation (Power, 1997; Shore & Wright, 1997; Strathern, 2000). These are insightful observations when those technologies are indeed effective and individuals take up the tasks of self-regulation and self-disciplining (Jaye, Egan, & Parker, 2006).

While insightful for this analysis, the risk of Foucault’s governmentality perspective, and more precisely a discursive focus on political rationalities and mentalities of rule alone, lies in its implicitly instrumentalist and functionalist nature, which presupposes that policies and plans will successfully accomplish their strategic effects (Dupont & Pearce, 2001; Mathews, 2011; Mosse, 2004). The problematic assumption is that governmental technologies will effectively produce self-governing subjects who respond as planned and expected to normative control mechanisms. ‘Whilst the discursive formation of the subject is a key strength of governmentality, it is a mistake to read off consequences from governmental ambitions, for it cannot be assumed that reproduction happens and power always realizes its effects’ (McKee, 2009, p. 474). This disregards that people are not passive subjects but social actors with human agency which shapes their varying social practices and collective responses to policy and governmental technologies in specific social and institutional contexts (Alexander, 2011; Dupont & Pearce, 2001; Long, 2001). Although Foucault admitted nothing happens as planned, and emphasized multiple and sometimes contradictory rationalities (McKee, 2009), he however insisted on their systematic and real effects (Li, 2007).

In her seminal work, Li (2007) questions how Rose (1999) separates his governmentality studies from sociologies of rule, which study the ways in which rule is actually accomplished. He chooses to study government by asking what authorities wanted to happen, in relation to how they defined problems, objectives, strategies and techniques, instead of starting from the historical or sociological questions of what happened and why (Li, 2007). Similarly, Foucault observed that studying the genealogy of an institutional complex of imprisonment is very different from the ethnographic study of the ‘witches’ brew’ of actual practices in prisons. In her ethnography of conservation and improvement projects in Indonesia, Li proposes to bring these two kinds of study back together: analysis of governmental interventions and analysis of ‘what happens when those interventions become entangled with the processes they would regulate and improve’ (Li, 2007, p. 27). For this article, it means that ethnography of policymaking and everyday organizational life needs to study empirically how

actors make and respond to new policies and how power and expertise then adjust governmental technologies to deal with such individual and collective responses, either more or less effectively.

Taking such an ethnographic perspective, Rap (2006) demonstrated how the 'success' of the IMT policy model in Mexico was produced through various discursive, material and performative mechanisms and effects. We later illustrated that policymaking in the case of IMT was an interactive and ongoing process that is potentially self-reinforcing, but often fragile and reversible in practice (Rap & Wester, 2013). We argued that only by building a network of support and excluding opposition, a policy idea gathers momentum and is made to succeed. This builds on the insight from Mosse (2004) that 'policy primarily functions to mobilise and maintain political support, that is to legitimise, rather than to orientate practice' (Mosse, 2004). The operational control that bureaucracies have over practices and events is often limited, but where they can exert control is over the interpretation of events. So success in policymaking 'depends upon the stabilisation of a particular interpretation, a policy model' (Mosse, 2004). We further that a set of policy (or governmental) technologies was developed in response to societal conflicts in order to sustain the policy (Rap & Wester, 2013). Our analysis showed how a composite package of governmental technologies increasingly worked to include a network of support and to exclude opposition at different levels, while at the same time stabilizing an interpretation of policy-related events.

In line with these ideas, governmental technologies have a double-sided nature, both operational and expressive. On the one hand, governmental technologies generate, govern and potentially stabilize an organizational arrangement of subjects, actors and objects that support NRM policy. On the other hand, these technologies also express, idealize and imagine a policy interpretation which concurs with prevailing ideologies (Cannizzo, 2015), technocratic and modernist idea(l)s of order and policy myths featuring 'the user' as a benign and rational actor. This work is cultural and ideological, rather than directly informing organizational and resource-related practices. While governmental technologies may only be partly effective in their own terms, they can still be held true or right, because the underlying policy interpretations are compatible with technocratic and theoretical ideals of order and cultural myths among policy makers.

3. The IMT policy

The Mexican revolution (1910–1917) and agrarian reform historically formed a state with a corporatist organization of peasants and private producers, in line with article 27 of the constitution which regulated land tenure and water management (Aboites, 1998). The state and its bureaucratic apparatus increasingly took a central role in the construction and management of larger IDs, while already existing (smaller) irrigation units continued under farmer management or re-grouped under publicly managed IDs. This history of land and water reforms reinforced the centralization of water control in the Mexican State and its bureaucratic apparatus (Rap et al., 2004; Wester et al., 2009). However, centralization paradoxically required decentered and embedded mechanisms of control that the state cannot fully dominate (Banister, 2014; Rubin, 1997). Towards the end of the 1980s, neo-liberal water reforms created a new power–knowledge regime, which rearranged the water-policy arena and made 'water users' the main subject of water governance.

Nonetheless, the policy idea of transferring IDs to farmer organizations predates the IMT policy of the 1990s by more than half a century. Palerm Viqueira (2008) questions the myth that the state always administrated Mexican IDs until the transfer policy. Various antecedents of 'user management' existed in state-run IDs (Rap et al., 2004; Rodríguez Haros & Palerm Viqueira, 2007).¹ Irrigation and water laws between 1926 and 1946 already contained provisions for the creation of irrigators' associations or WUAs and water boards to manage IDs. The 1929 water law already mentions WUAs and confers legal status to them. Subsequent water laws also allowed for the operation of IDs by WUAs or water boards when it was judged opportune by the state. However, in 1972, a new Federal Water Law constituted a peak in centralization by establishing that the Ministry of Water Resources was fully responsible for the IDs, from construction to management, effectively forbidding user management. This law may have been one of the reasons that earlier antecedents of user management of IDs were erased from public policy debates. Nevertheless, under the formal guise of public management, there were all kinds of informal and customary arrangements in which irrigators continued to

exercise a significant role in irrigation management. Nevertheless, farmer representation in the IDs was limited to representatives from the *ejidos* (agrarian communities of peasants) and the private producers, which often had limited formal influence on bureaucratic decisions concerning irrigation, cropping plans or fee levels. In spite of these important antecedents to irrigation management by 'water users', Mexican state policy did not consistently and uninterruptedly label, organize and legally recognize as such.

Since 1989 onwards, a newly created government institution 'Comisión Nacional del Agua' (CNA: National Water Commission) transferred the majority of its IDs to newly formed WUAs. The Mexican government 'pioneered' this IMT policy, drawing much international attention. As part of a series of neo-liberal reforms during President Carlos Salinas' administration (1989–1994), some 2.5 million ha of government IDs (out of a total of 3.4 million ha) were transferred to WUAs. The speed with which the transfer programme was carried out surprised donors, consultants, water professionals and researchers alike, especially as handing over irrigation systems to farmers on such a scale had not been attempted before anywhere in the world. Consequently, Mexico's IMT programme was considered a 'success' in water-policy circles, and the Mexican policy model became an international showcase for promoting neo-liberal water reforms (Rap, 2006).

A particularly effective aspect of the IMT policy model was the way in which it celebrated the success of what was actually largely a painful cost-cutting operation. The model glorified those policies and its advocates in a language and an imagery that were full of a kind of heroic euphoria: 'champions of reform', 'strong government commitment', 'win-win situations', 'self-sufficiency', and a 'Big Bang' (Rap, 2006). The underlying narrative also granted this heroic aura to the user as a champion of self-governance. The IMT policy model discursively constituted the 'water user' as a governable subject and enterprising 'self' that would autonomously manage irrigation systems when the state retired from such responsibility. Influential in this respect has been neo-institutional theory that proposes 'crafting institutions for self-governing irrigation systems' (Ostrom, 1992). This body of theory advanced the essential role of water users in the design of successful irrigation management arrangements, which were autonomous from the government. It presented user participation as a way to bring irrigation management in line with proven management theory. This discourse of selfhood was linked with the main objective of IMT: to reduce public expenditure on irrigation by creating financially 'self-sufficient' or financially autonomous WUAs that would recover the full operation and maintenance (O&M) costs of the irrigation systems. The heroic language of self-determination powerfully framed financial cost-cutting measures.

During the first phase of the transfer programme, the CNA divided the IDs into irrigation units, termed *módulos* (modules), varying from 1500 to 50,000 ha in size and established a WUA in every module. The WUAs were formed as legally recognized non-profit civil associations to whom the CNA granted renewable concessions for the use of water and the irrigation infrastructure, for periods ranging from 5 to 50 years (Espinoza de León, 1998). The infrastructure generally included all the canals, drains, irrigation structures and roads falling within the boundaries of the modules, which remained state property. A list was made with an overview of the infrastructure and its status at the time of transfer. The WUAs assumed the O&M of their module, which they also had to finance fully by collecting irrigation service fees from their members. Two groups of water users in a module, *ejidatarios* (small and medium-sized communal land ownership) and *pequeños propietarios* (private landowners with more land generally), elected their own delegates to form a general assembly. The assembly functions as the supreme governing body of the WUA. It chooses an executive council and an oversight committee, for a period of three years. This 'structure of participation' intended to ensure user involvement in important matters such as the calculation of irrigation fees. The state, represented by the CNA, retains ownership of the nation's waters as well as the irrigation infrastructure and retains control over the head works and the main canal system and important oversight functions.

4. What makes user management?

This section discusses a range of governmental technologies that were important for constituting the new 'water users' (subjects), WUAs (organizational actors) and the modules for water resources management (objects) and attempts of bureaucratic power and expert knowledge for governing their conduct. We analyse amongst others

how the following governmental technologies worked to construct and organize the water users: diagnostic studies, water users' registers, policy labels, alternation, representative structures for user participation, promoter teams, modular boundaries, governing documents, support programmes, step-by-step procedures and pilot projects.

4.1. Diagnostic studies and water users' registers to organize water users

The IMT policy generated a diverse pattern of responses to governmental attempts at organizing water users in the Mexican countryside. Initiating transfer in many IDs encountered staunch opposition from farmers. For government officials, it was initially difficult to convince a large majority of farmers to organize as 'water users' and accept greater management responsibilities for irrigation systems with often poorly maintained irrigation infrastructure, while at the same time agreeing to pay significantly higher water fees to finance user management. The infrastructural conditions but also the wider socio-economic, agro-ecological, politico-institutional and marketing circumstances varied wildly in the more than 80 Mexican IDs and with that also the willingness of farmers to take over irrigation management (Rap & Wester, 2013). However, the CNA policy-makers actively gathered intelligence about such differential conditions and they incorporated such knowledge in making the policy. Both bureaucratic knowledge and power informed each other in this new policy regime. Hence, a gradual transfer was the policy alternative chosen in 1989. The more than 80 IDs were classified in three groups:

1. Twenty-one districts; 1.98 million ha; 'the most advanced in agricultural technology, infrastructure and social organization'.
2. Forty IDs; 850,000 ha; 'less developed' and needing 'a rehabilitation and organization programme before the transfer'.
3. Nineteen IDs; 400,000 ha, with 'special difficulties so they had to be carefully analysed in order to establish special strategies' before the transfer.

Only the first group of 21 districts was ready to be modernized, decentralized and transferred between 1990 and 1994. These districts were carefully selected based on an expert assessment by CNA of the willingness of the users to accept the transfer. Most of them were large, commercially oriented districts located in the north of Mexico with fewer infrastructure problems. This gave effect to the gradual transfer programme, already conceived early on in the policy process, consisting of three policy objectives: substantially raise irrigation service fees, rehabilitate and modernize the 21 IDs designated for transfer, and finalize the transfer of these 21 districts by mid-1994.

However, the initial attempts to materialize IMT with governmental technologies did not succeed in constituting and organizing water users as governable subjects that could take over irrigation management. Rap and Wester (2013) show how the gradual policy package experienced many initial problems, after which several governmental technologies were significantly adjusted. Initial experiences with transfer in the field shaped an iterative process in which expert knowledge was developed to re-make the policy and its governmental technologies based on concrete policy experiences. The CNA sent out mobile teams of officials, lawyers and experts from its headquarters to the IDs targeted for transfer. These teams devised and experimented with a series of governmental technologies to identify, anticipate, and incorporate support and deflect opposition, with the aim of advancing beyond potential conflict points in the policy process and stabilizing a particular policy idea. When the teams brought their experiences back to the national level, to a transfer policy committee presided over by the CNA and in loan negotiations with the World Bank, they were discussed, evaluated and modified, and then brought back to the field. These feedback mechanisms were centrally coordinated by CNA and led to a convergence of dispersed experiences, an accumulation of knowledge to support bureaucratic power, and a standardization of governmental technologies with which to implement the transfer. When bureaucratic power and expert knowledge started to redesign the governmental technologies in response to concrete opposition, progress was made in organizing water users in WUAs. This finally contributed to an unforeseen acceleration in the transfer of a majority of IDs, that included all three categories discussed above.

Additionally, CNA used an array of political strategies and governmental technologies of *coerced persuasion* (Desai, Holden, & Shelley, 1998) to overcome opposition and generate support for the transfer policy. Rather than imposing the policy with the risk of facing open opposition and public conflict, the state used a subtler governance approach informed by expert knowledge to avoid, contain and govern such collective responses of farmers and other affected groups. Diagnostic studies were carried out strategically in the districts to evaluate the feasibility of transfer and the willingness of different groups of farmers and their leaders to accept the transfer policy. Around 24 of these studies were carried out by the *Instituto Mexicano de Tecnología del Agua* (IMTA: Mexican Institute of Water Technology). Influential people in an ID were identified and interviewed to ascertain their opinion about the transfer, including leaders of *ejidos*, private landholders, political leaders and representatives of producer organizations. Initially, in many districts the mood was against transfer because of the poor state of the infrastructure and the substantial increase in irrigation service fees that had to precede the transfer. IMTA researchers estimated that, initially, around 60% of the farmers in the IDs opposed transfer, 30% were not aware of the changes, and only around 10% supported it. The latter group understandably became the target for user organization, whilst the former groups were circumvented.

According to a senior CNA official, two explicit aims of the transfer programme were to ‘eliminate’ the:

- Ministry workers’ union, which formed a serious obstacle in the water distribution process
- ‘Corrupt peasant leaders’ who, through their political influence, systematically hindered attempts to raise the water fees and improve O&M conditions.

This shaped the bureaucratic strategies to avoid potential opposition and constitute water users’ leaderships that would support the policy. For example, many peasant leaders were neutralized as a result of designing the organizational form of a WUA which did not include farmers who were not qualified as ‘water users’ (land owners in irrigation modules). For example, in Nayarit the elections for a WUA excluded a former peasant leader who had been active in representing the interests of farmers at the tail end of the irrigation system. He was not included in the water users’ register, a formal list which registers all acknowledged water users of the WUA, as he did not own land in the ID. As a governmental technology, this register thus also actively determined who could represent the ‘water users’ (Rap & Wester, 2013).

The diagnostic studies informed an exclusive and selective approach to defining ‘the water user’. CNA used them to identify, target and convince potentially willing farmer leaders and to enrol them as water user representatives to lead the organization of water users. The studies were also used to evaluate the possibility of reaching agreements between different influential local leaders and political groups in order to form an alliance that would support the transfer. In addition, they were used to identify the opposing groups and leaders in order to exclude or circumvent them as water users. They did inform how knowledge and power were organized to diagnose support and opposition and inform a strategic approach to constitute the water user organizationally. Nevertheless, we should also not exaggerate the overall effectiveness of these diagnostic studies, which were only carried out in a part of the districts and failed to avoid public conflict or overcome opposition in some cases (Rap & Wester, 2013).

4.2. User representation, power deals and community organizers

Governmental technologies to regulate user representation were assembled in response to a set of experiments, experiences and conflicts in the field. This is what the main CNA lawyer remembers, who was responsible to write the legal documents for the WUAs and visited many WUAs that were considered ready to take over the management of IDs:

At the start of 1989 we had a very general idea about how to ensure user participation. However, we started from zero as far as the legal issues were concerned. Everything had to be designed and worked out from a legal point of view. The legal design was drawn up in 1989 by this team and me. We wrote the concession titles and the statutes for the associations. During this process it was very important to listen to the users. We held many meetings in several irrigation districts, mainly in Sonora, in which I carefully listened to the complaints put forward by the users. ... The idea of alternating the presidency of the

associations came up at this time, based on experiences in the field. This is included in the statutes. The content of the concession titles, the statutes and the rest did not change much after 1989, although it was refined a bit. I would work until late at night in 1989 on these legal issues to make transfer possible. (Interview, 22 June 1999)

An important governmental technology that shaped ‘water user participation’ organizationally and resulted from these field missions was the alternation of WUA board members. CNA officials were concerned that the elections for WUA board positions would create conflicts between members of the land reform communities (*ejidos*) and private landowners (*pequeños propietarios*), the two corporately organized landholder categories that were now together subsumed under the policy label of ‘water users’ (Wood, 1985). This issue was resolved by deciding to alternate the posts of president and treasurer of the WUA after board elections every three years between representatives of both the *ejidos* and the private farmers. This governmental technology, the result of a negotiated and institutionalized power sharing deal, combined traditionally separate spheres of influence on the WUA’s board to represent a newly organized constituency of water users and was crucial for reaching agreements and building alliances between groups of farmers and their leadership that had historically been opposed to each other.

The alternation became ingrained in the governing documents of one of the first WUAs in Mexico (El Grullo), which subsequently served as the basis for the governing documents drawn up in many other associations later on (Rap & Wester, 2013). A standardization of this governmental technology, however, did not mean that it was equally effective everywhere. For example, in the El Grullo ID in Jalisco, the alternation was not strictly kept to, but the WUA Board came under the influence of competing corporative sugar cane producer organizations which affected user representation and redirected resource flows (water, money, etc.). In Nayarit, alternation was promised to push local farmer leaders to accept transfer, but was not implemented as such. A politically and economically influential delegate of the private farmers, became the first official WUA president and from that influential position he was later elected as a local deputy for the state parliament. Towards the end of his three-year term, he supported a befriended *ejido* delegate financially and politically to be elected as next president of the WUA. This new president also used his position politically and served his period without remaining a ‘water user’ (owning irrigated land) (Rap, 2004, 2007). The intended alternation of organizational power was only partly effective, because it could not prevent the continuation of corporatist and other forms of politics in water management (Menchaca & Torregrosa, 1995). Political actors were actively taking up subject and power positions as user representatives and leaders in the WUAs in both legitimate and illegitimate ways, significantly shaping the direction of user participation. Of course, these leaders did not just await passively to be diagnosed, but were actively taking up, occupying and co-constituting the required subject positions in different ways (Taylor, 2011).

International and national higher echelons of finance, politics and expertise promoted another governmental technology: the involvement of community organizers to organize water users for the transfer. Because the organization of water users was blocked amongst others by ID field staff, the idea of forming temporary teams of promoters to bypass their blockade was taken up in loan negotiation meetings with the World Bank. The concept of community organizers had been used by the World Bank, Ford Foundation and USAID in earlier irrigation loan projects in the Philippines and in Sri Lanka during the 1970s and 1980s. But more importantly, these ideas matched those developed by the National Solidarity Program (PRONASOL) in Mexico, that promoted forms of social spending to alleviate poverty and restore the legitimacy of the *Partido Revolucionario Institucional* (PRI: Institutional Revolutionary Party) in rural, urban and indigenous communities facing harsh structural adjustment. The intellectual source of these governing technologies was the doctoral dissertation of President Salinas de Gortari at Harvard. This thesis studied the weaknesses of the traditional forms of government spending to elicit political support for the PRI regime. His policy recommendation was to promote the emergence of a new generation of community organizers that would bypass the rigid and corrupt traditional elites and party cadre.

These disparate forms of intelligence informed the CNA’s strategy to build local support for the transfer. It formed interdisciplinary promoter teams and briefed them on the transfer strategy and the steps that had to be taken to form a WUA. Subsequently, these teams visited the public assemblies of *ejidos* and private landholders

to explain the objectives of transfer, the rights and obligations involved, and the need for a substantial increase in the fees. The promoter teams encountered the practical problem of having to deal with large numbers of water users organized according to different types of landownership. In response, they developed the idea of appointing water delegates from the *ejidos* and the associations of private landholders in a designated area to form an assembly of water user delegates. After the approval of this idea by CNA, the promoters were given the responsibility of organizing an assembly of user delegates with a fixed number of delegates from both the *ejidos* and the private landholder associations. The assembly of delegates was then given the responsibility of constituting the WUA and electing a board. For CNA, persuading an assembly of delegates to take over irrigation management was much easier and facilitated the transfer in a context where initially a majority of water users opposed it.

Based on the diagnostic studies, mobile teams of CNA officials, community organizers and other governmental technologies and other dynamic sources of knowledge on the IDs, CNA targeted the politically influential, economically powerful and organized groups in the district. These farmers were generally more favourable to the transfer than the large majority of farmers. The agreements negotiated with these pre-selected groups often resulted in WUA board positions for their leaders. In socially and politically more complicated districts, CNA negotiated the transfer between different groups by assigning and alternating posts between different landholder categories, or brokered alliances between different leaders.

The creation, targeting and selective inclusion of user groups who were in favour of transfer significantly simplified increasing the irrigation service fees and the acceptance of transfer. It also contributed to accelerating the formation of WUAs. Initially, the position of large agricultural entrepreneurs was neutral. These producers, who owned agro-industrial companies and controlled large areas in IDs for export agriculture, often maintained close relations with the district staff and already enjoyed privileged access to water and maintenance services. However, they became convinced of the need to support the transfer not only because they saw evidence in the first districts transferred that they could acquire more direct control over crucial resources, such as water and maintenance machinery, but also because the WUAs were becoming politically and financially powerful organizations.

These governmental technologies publicly produced ‘the water users’, by negotiating who could act as representatives and leaders of this newly imagined multitude. They had to accept the terms of the transfer in order to form a WUA: the increase in the user fees to achieve ‘self-sufficiency’, the state of the infrastructure and the degree of realized rehabilitation, the alternation of influence spheres, the three-year elections of board members in the General Assembly of delegates, etc.

4.3. Defining the users, WUA boundaries and bureaucratic control

The IMT policy discourse labelled the ‘water users’ as the main beneficiaries and categorized them as distinct, coherent and homogeneous user groups with singular functional roles. This was contentious (Powell, 2014), because it disregarded social differentiation and shifting understandings of the water user. In Mexico, there was a wide variety in groups of farmers when considering socio-economic, cultural and technological aspects: for example, peasants/private landholders, maize/sugar cane/vegetable producers, subsistence/export farmers, land owners/-renters, etc. For example, at the Left Bank of the River Santiago in Nayarit there was significant differentiation among those subsumed under one user identity: peasants, private producers, tobacco producers, rice farmers, landowners, renters or irrigators. Further, in the field it was often not so clear at all who qualified as water users. Many landowners, registered as water users, rented out their land to other producers or sometimes had land labourers to irrigate the crop. In addition, the people that actually irrigated the land and used the water were frequently not the owners of the land or the crop. For example, tobacco farmers hired irrigators and pump operators as skilled labourers to do this work, as many did not own the required pump and the mobile sprinkler set. Hence, the person actually using water in the field was often neither the person who had to pay the irrigation fee (usually the person growing the crop) nor the registered water user (landowner). Hence, the people who actually used the water did not always qualify as ‘water users’ and vice versa.

Another group, which WUAs implicitly excluded from being a water user, were women. The Spanish word for water user is ‘usuario’, which is either a gender-neutral or a masculine indication. However, the everyday usage of ‘usuario’ in the public domain of IDs came to refer primarily to men (Vera, 2011). A partial effect

was that WUAs did not always conceive female farmers using water as water users. This was even more evident when looking at the number of women selected as delegates in WUA assemblies and directive boards. In the states of Nayarit, Jalisco, Michoacán and Guanajuato, where we have visited many WUAs, we did not meet a female delegate or board member.

Additionally, many farmers seldom identified themselves as water users outside the domain of the WUA. Hence, it was premature to assume that the policy label of ‘water user’ became widely accepted and internalized by the target population, let alone that it regulated individual behaviour and the practice of water distribution and fee payment. On different occasions and because of social differentiation, farmers identified themselves in various ways, but not often as users. The following anecdote illustrates this point. I (the first author) was talking to a small tobacco producer on his plot that lay near to a canal. I could see that it had been recently irrigated by some pump operator with a sprinkler installation. I asked him what a *usuario* needed to do in order to irrigate. To me this was a most obvious question, as this is the term that the policy literature and WUAs generally use for them. He returned my question by asking ‘¿usuario de que?’ (user of what?). Without knowing it, he had drawn my attention to the fact that he was more than a user of water and that this concept therefore did not necessarily determine his behaviour.

The policy discourse on user management usually conceived of water management as a technical and apolitical act of service provision (Rap, 2007). Along these lines, the size and boundaries of the irrigation modules that a WUA can manage were conceived either in hydraulic or in economic terms. The CNA legitimated the way in which it divided IDs in modules in terms of ‘natural’ hydraulic units (e.g. the drainage area of a secondary canal system) or financial self-sufficiency and economy of scale. This framing downplayed the political aspect of water management. In practice, however, politics seeped back in and also influenced how modular boundaries of WUAs were actually drawn and adjusted (Rap, 2007). The definition of the boundaries of the ‘object’ (irrigation module) also determined which user leadership dominated the WUA management (actor) and also which ‘users’ are represented (subject). This shows the close interrelation of subject-object- actor definitions and boundaries.

The legal definition of a module and the spatial boundaries of user management, also defined the relation with the state bureaucracy. The water law of 1972 prohibited the transfer of the IDs. To resolve this issue, CNA devised an ingenious legal construction, which consisted of dividing the districts into irrigation units. Article 77 of the 1972 water law defined irrigation units as farmer-managed irrigation systems with users’ associations fully responsible for O&M and collecting water fees. Article 78 of the law stated that two or more irrigation units could be joined to form an ID. Based on these clauses, the lawyers argued that an ID could be considered to exist of various irrigation units, which were called *módulos* (modules). An additional spin given to this legal construction by the CNA lawyers was to constitute the WUAs as civil associations. This was necessary to ensure that the WUAs would fall under the control of CNA, as ‘normal’ WUAs for irrigation units as provided for by the 1972 water law would fall under the responsibility of the Ministry of Agriculture. This governmental technology was a significant triumph in the bureaucratic struggle between the hydraulic bureaucracy (CNA) and agricultural bureaucracy (SARH) over the control over IDs (Rap & Wester, 2013).

The CNA designed several additional governmental technologies to secure a degree of bureaucratic control over the WUAs. The governing documents of the WUA included among others: a WUA charter and regulations, the Concession Title (*Título de Concesión*), that establishes the legal terms for the infrastructural concession and the operational instructions for a WUA, as well as a description of the transferred irrigation infrastructure and machinery. According to the head of CNA’s legal department at the time, the new water law was drafted between 1989 and 1991, not only to legalize the irrigation transfer programme but more generally to confer powers to the CNA as the single water authority in the country. Through such governmental technologies the CNA regained bureaucratic control over the IDs, the organizational form of water user participation and the policy process of transfer.

4.4. Promoting model users, exemplary WUAs and irrigation systems

The governing documents of the WUA stipulated operational rules that intended to regulate water management and user organization, but were not necessarily effectively internalized and implemented by water users. Instead,

they idealized user management and expressed how ‘good users’ would behave. An example was the idea that Mexican water users paid their irrigation fees to the WUA before the first irrigation turn of the season. The conclusion followed that this ensured high fee collection rates, because farmers needed to pay their fee before receiving any water. This was an understandable misconception, based on a rule in the Concession Title. Nevertheless, it was not a generalized custom. WUAs continued to confront the practical difficulties of refusing irrigation turns from open canals to free riding water users. Fee default remained a major challenge for WUAs, because not all ‘water users’ had equally internalized these rules as part of their conduct. WUAs did not have effective sanctions to discipline free riders who take irrigation turns before or without paying their fees, or to exclude them from access to water (Rap & Wester, 2013).

According to another operational rule from the Concession Title, water distribution was based on ‘weekly demand’. A water user had to request an irrigation turn before the end of the week in order to be able to irrigate during the next week. The *canaleros* were the field staff responsible for water distribution, who received and processed such requests. In actual field practice, such operational rules did not effectively govern water distribution and water use. At the Left Bank of Santiago in Nayarit, the *canaleros* instead stated that water users in general needed to inform them a period of three days in advance before receiving an irrigation turn. Nevertheless, it frequently happened that farmers, irrigators or pump operators opened their canal intake or started to pump water without having requested an irrigation turn from the *canalero* at all. The *canalero* then had to deal with the practical and technological difficulties of refusing irrigation turns to those water users without permission to irrigate. This made the actual water demand an unpredictable factor, only partly regulated by centralized planning. It further responded to a de-centred technological and material dynamic of water distribution that is difficult for the *canalero* to control. During the week, the *canaleros* therefore occasionally had to adapt their weekly planning and demand more or less water for his sections (Rap, 2004).

The three-day operational rule embodied an ideal idea of order in water distribution among *canaleros*. Referring to the rule served the symbolic purpose of demonstrating that they, as *canaleros*, were not responsible when, for instance, they could not deliver an irrigation turn on time. This rule legitimized their role and performance as *canaleros*, whilst extending the blame or unleashing their frustrations towards the users, or in other cases the management. It was striking that the *canaleros* especially referred to ‘the users’ in association with this rule. It hinted to a concept of a ‘good user’ and a normative idea of conduct (Law & Akrich, 1994). Operational rules defined a proper and rational conduct and ascribed a certain identity or label to real-life actors. They prescribed a normative idea of conduct for organizational actors with fixed identities and rationalities. The rules posited an image of ‘the good water user’, a rational and disciplined user, willing to pay a certain fee on time in exchange for a specified service, namely timely and adequate water allocations (Law & Akrich, 1994).

Besides operational uses, governmental technologies also have an expressive dimension when they are used to promote exemplary models for water users, WUAs and irrigation projects. The success of the IMT policy in Mexico was performed in pilot projects and policy events as part of a promotion campaign to gather popular support for the policy (Rap, 2006). These policy performances tended to idealize user management and actual practices of water users. Chambers (1988) already argued that although such ‘islands of salvation’ are usually unrepresentative and project certain development myths, pilot projects are much visited and quoted, as a result of which a belief gains currency that an approach is replicable (Chambers, 1988, pp. 59–62). The success of the Mexican policy model was performed by field visits to privileged pilot areas that were believed to be typical of irrigation in Mexico. However, these pilot areas, mainly in the North and Northwest of Mexico, were historically privileged, relatively more modernized, commercial and better maintained. They were transferred first and provided the necessary early policy examples that were promoted nationally and internationally. On the one hand, this generated domestic support for the programme and facilitated the more difficult transfers. On the other hand, visits of loan review missions and international delegations secured financial support and international interest for the Mexican policy. For example, in 1992 around 50 senior Turkish officials, were invited to Mexico. Study tours helped to create amongst them ‘a vision of what was possible’ and provide ‘examples of how to undertake’ a similar

programme. This resulted in the Turkish government adopting a similarly ambitious and accelerated IMT programme.

Pilot districts served as models of successful WUAs that many water user groups from all over the country visited (Rap, 2006). For example, El Grullo was one of the first IDs in Mexico to be officially transferred. At the beginning of 1990, the operation of El Grullo was turned over to the WUA and the Concession Title was presented to the WUA in May 1990, detailing the tasks and responsibilities of the WUA and its relation to the CNA. On 21 January 1991, President Salinas visited the region to publicly hand over the ID to the WUA. This public ceremony symbolically demonstrated the transfer of responsibilities between the State and the WUA whereas, in practice, water users had already participated in the management for quite some time. This public ceremony received attention from the national press, and similar publicized events were subsequently enacted wherever transfer took place. During the following years, CNA used El Grullo as a pilot project to promote the benefits and success of its transfer policy to potential water users from other districts and national and international visitors.

CNA's careful selection of pilot projects from the more commercial and well-maintained IDs, mostly in northern Mexico, added to the positive image of transfer. Although these visits projected policy idealizations of actual user management, they helped to visualize and imagine how transfer could work elsewhere. The video 'Participatory irrigation management: Seeing is believing' (EDI, 1995) shows the recorded performance of a 1995 EDI policy meeting, at which several policymakers recount the Mexican experience to a select audience of governmental officials. They then participated in field visits and encounters with 'real' stakeholders, such as water user representatives, which are obviously a selection of people with a favourable opinion. Ideologically in line with the policy model and associated governmental technologies, the video claims that the financial self-sufficiency of WUAs is a fundamental prerequisite for effective user management. Meanwhile, the documentary shows selected images of (male) Mexican 'water users', wearing their typical sombreros, who are in a WUA office and hand money over a counter to a secretary. She calculates the fee amount on a calculator and then hands them back their change with an officially stamped receipt for their fee payment. The voice-over states: 'In Mexico, water users pay a fee prior to water delivery so that the financial basis of the organization is secure.' Although such scenes do occur in everyday life of WUAs, they constitute an idealization when they are presented as evidence of the general fee payment behaviour of water users.

5. Analysis and conclusion

In sum, neo-liberal water reforms in Mexico created a new power/knowledge regime that set out to make the 'water user' the main subject of water governance, but only minimally achieved a new state-citizen relation (Wilder, 2010). Governmentality only very partially managed to govern the individual conduct of water users, but to a more substantial extent their organizational conduct. Naturally, the multiple and gradual processes that shape and substantiate water user subjectivities have continued to evolve in new directions, since this research has taken place.

This article has specifically reviewed how governmentality creates new subjects (water users), organizational actors (WUAs) and objects (irrigation modules and water resources), and how it seeks to govern their conduct at a distance through new forms of bureaucratic power and expert knowledge. On this basis we have synthesized in Figure 1 how a range of neo-liberal governmental technologies can work for subject/actor/object formation in NRM more in general. We arrange and distinguish them here analytically, acknowledging that different governmental technologies contribute to intricate entanglements of subject-object-actor networks in the governance of natural resources:

The case material and this synthesis allow for a broader reflection on the role of power/knowledge in the context of NRM and decentralized resources governance. The article shows that a governmentality perspective alone may erroneously assume that individual resource users effectively internalize disciplinary norms and ideas of selfhood and the implicated behaviour. The article specifically argues that governmental technologies make and govern resource users by discursively and materially constituting an organizational

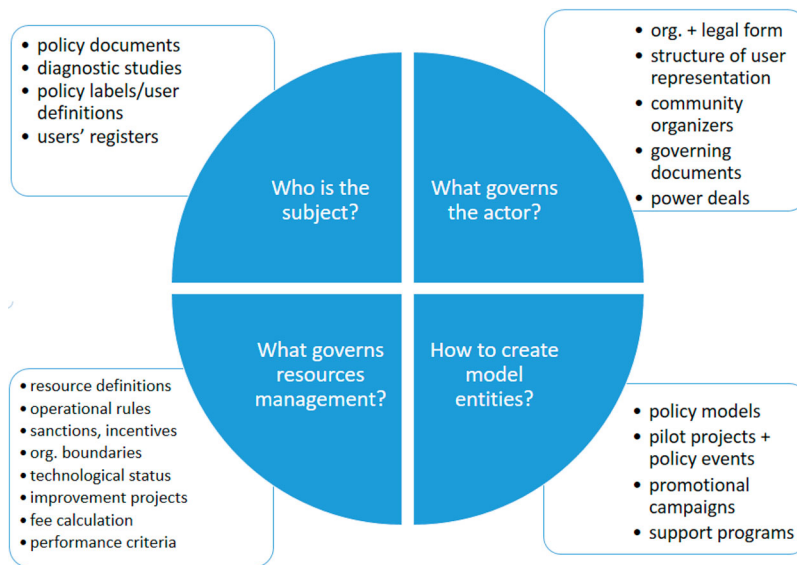


Figure 1. A synthesis of governmental technologies for subject/actor/object/model formation in NRM.

arrangement for user management, more than by directly acting on individual subjects' self-regulated conduct. The case also shows that governmentality is always an ongoing process that actors co-produce and respond to and not an automatically effective project.

Enriching the governmentality perspective with ethnographic analysis creates an insight into how actual subjects, objects and actors contribute and respond to the introduction of governmental technologies in NRM. From this we can learn that power/knowledge creates subject-, object- and actor-constructions that are often multiple, sometimes conflicting, but also co-existing. Further, these subjects and actors develop their own situated perspectives on the evolution of NRM, which conversely influence the existing configuration of power/knowledge. Furthermore, ethnography shows how actors respond to new policies and how power and expertise then diagnose such responses and adjust governmental technologies to enrol or sideline those voices in organizational arrangements for user management.

Taking in account this multiplicity, knowledge and power are able to create and adjust governmental technologies, thereby informing how policymaking constitutes resource users, and governs organizational actors and resource management networks. Furthermore, the presented case has illustrated that the institutional design of governmental technologies is embedded in how bureaucracies struggle over and try to influence their future role in resources management. Finally, governmental technologies that constitute organizational actors such as WUAs also idealize them as models for collective self-management. Figure 1 therefore incorporates as a fourth element the cultural and ideological work and expressive dimension of governmental technologies, active in creating policy myths, models and exemplars in line with dominant ideologies and beliefs.

Note

1. The text of this article draws significantly on our earlier articles on the topic in which Mexican and international sources are quoted that have formed the Mexican policy discourse and model of IMT. Those references will be left out here because of space considerations and the reader is requested to go back to those earlier articles for the sources and background. We only included theoretically relevant sources here.

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ORCID

Philippus Wester  <http://orcid.org/0000-0002-0126-7853>

Notes on contributors

Dr. Edwin Rap has been undertaking research as a visiting scholar at IHE-Delft. He has a PhD in water management and rural development sociology from Wageningen University and his research interests include the ethnography of water institutions and organizations, professional formation and expertise, and the making of water policy and law. He has worked in different parts of Latin America, the Middle East and Africa.

Dr. Philippus (Flip) Wester is Chief Scientist Water Resources Management with the International Centre for Integrated Mountain Development (ICIMOD). He has a PhD degree in water resources management from Wageningen University and his research focuses on climate change adaptation and water resources management, with attention for the politics and governance of water resources, river basin management, water reforms and water allocation processes.

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