

**Matadepera, Barcelona Metropolitan Region, Spain:
Peasant Memory for Wildfire Prevention**

Name of the policy: Recovery of social-ecological memory for building resilience to wildfires

Start date: October 2003

Completion date: Ongoing

CONTEXT

GOVERNMENTAL CONTEXT

City context

The municipality of Matadepera covers 25.4 km² on the hillside of one of the Catalan pre-coastal mountains, and has approximately 9,000 inhabitants. It is located in the outer part of the Barcelona Metropolitan Region, less than 10 km away from the largest metropolitan subcenters of Terrassa and Sabadell (ca. 200,000 inhabitants each), and well connected by car to the city center. The climate is mild Mediterranean, with highly variable rainfall and frequent summer droughts. The vegetation is dominated by evergreen oaks with some pines in the lower areas. Settlement in Matadepera has historically been structured in dispersed farmhouses combining rain-fed crops with the exploitation of forest resources and, since the late 18th century, in a compact town that grew with the arrival of landless peasants during a period of overall demographic growth. By the end of the 19th century, the town gained importance as a summer place for bourgeoisies from nearby industrial cities, and the initial construction of several second residences soon led to the expansion of low-density housing in fields, vineyards, and forests during the second half of the 20th century, only to be halted with the declaration of a protected area in 1982. About 61% of the municipality is now included in the Natural Park of Sant Llorenç del Munt, while the rest of the land is almost covered by an extensive wildland–urban interface considered a high wildfire risk area by the Catalan Government, with special prevention measures needed.

Governmental decentralization context

The Spanish State created during the transition from Franco's dictatorship to representative democracy (Constitution approved in 1978) foresaw a process of governmental decentralization through the transference of some key competences such as Education and Health to regional governments. Among the responsibilities taken over by the restored Catalan government, there is the prevention and extinction of wildfires and the management of natural protected areas, which are now under the Catalan ministries of the Environment and Interior. Through these bodies, the Catalan government works together with local governments such as the municipalities, which have the obligation of developing policies of civil defense including the planning of wildfire prevention and extinction. This is the case of the town council of Matadepera, which is implementing the present policy in collaboration with local NGOs (Local Environmental Council and Group of Forest Defense) and other actors.

Institutional level of policy development

This policy is mainly developed at a municipal level, although with important interrelationships at multiple institutional levels and spatial scales, ranging from submunicipal (e.g., farms), to regional (e.g., Natural Park of Sant Llorenç del Munt), to international (e.g., scientific knowledge emerging from the implementation of the policy which is tested in peer-reviewed international journals).

SOCIAL CONTEXT

The small town of Matadepera, traditionally inhabited mainly by landless peasants whose livelihoods greatly depended upon vineyards and forests, has been dramatically transformed into an elite suburb that sprawls into the woods of the Sant Llorenç del Munt hillsides. Matadepera now has the highest per capita income of all Catalan municipalities larger than 5000 inhabitants, 70% higher than the Catalan average. Between 1956 and 2008, the urban area increased from 38 ha to 358 ha, while cropland decreased from 228 ha to 42 ha. Such a great social-ecological transformation was driven by the power of landowning elites who could impose their particular modernization project thanks to the repression of the republican aims of agrarian reform following the fascist victory in the Spanish Civil War (Otero et al. forthcoming). Although old rural settlers recognize that the expanding holiday-making economy had positive effects on their livelihoods due to increasing demand for services, building workers, carpenters, painters, gardeners, and domestic cleaners, they also perceive some important negative impacts caused by the process of urbanization and gentrification. The dispossession of sharecroppers from the lands they were cultivating, the erosion of the social life of the town, the degradation of the cultural landscape, and the increase in wildfire hazard are among the most important ones (Estany et al. 2010).

COMPREHENSIVE NARRATIVE

Description of the policy²

The practices once performed by local peasants to earn a livelihood from forests, fields, and livestock, which had evolved out of a long-term process of human responses to the environment, may be very useful for building a social-ecological system more resilient to wildfires in the current, completely different setting. Thus, the philosophy informing this policy is not to exclude wildfire from the local ecosystem, but rather to build a social-ecological system able to absorb fire events and retain essential structures, processes, and feedbacks. The policy we report here emerged and evolved organically as a mix of planning, accident, and contingency. This does not mean that its objectives, the agents involved, achievements, and beneficiaries are unclear, but it underlines that the process is a self-organizing one that involves different sectors of the local community and that goes beyond the top-down implementation of a single policy. Rather, it is intended to be a complex political process of action-research taking place at multiple scales in a social network increasingly resilient to ecological perturbations.

Background / Origins

In August 2003, a large fire killed five people and devastated thousands of hectares of forests on Sant Llorenç del Munt Mountain. Although the flames did not reach Matadepera, given the closeness of the event, many volunteers and firemen from the town took part in the extinction work. After the summer of 2003, the large fire of Sant Llorenç del Munt Mountain was on everyone's lips, and the event led some citizens to reactivate and lead the Local Environmental

Council of Matadepera (*Consell Local de Medi Ambient*), an NGO founded about ten years earlier that by that time was dormant. The awakening organization set up several roundtables and conferences with local and external experts to debate how to face the threat of wildfires in the region. The conclusions pointed out that large wildfires escaping extinction capacity were the result of the unmanaged growth of forests after the abandonment of coppicing for firewood and charcoal with the urbanization of the town and the overall substitution of forest fuels with fossil fuels. They also emphasized that the expansion of low-density housing areas scattered in the forests was the origin of the high risk for people and houses. The volunteers of the local Group of Forest Defense (*Agrupació de Defensa Forestal, ADF*) and the firemen stressed the need to manage fuel-accumulating forests to reduce the intensity of fire events – unavoidable in Mediterranean forests and scrublands – and the vulnerability of the local community.

Policy objectives

The policy has several objectives. The first is to decrease the fuel load in strategic areas through a variety of forestry techniques, extensive farming, and grazing so as to reduce potential fire intensity while enhancing habitats and species of special conservation interest. The objective is not to exclude wildfire but rather to prepare the social-ecological system to manage fire events without major losses in structure and functions. The second objective is to recover personal memories from those social groups worst hit by the suburbanization of the countryside and to enhance their social inclusion, especially the peasantry defeated in the Spanish Civil War (1936-1939) whose knowledge and practices are indispensable to enhance resilience to wildfires. The third objective is to definitively stop the encroachment of developments in the forests and to reverse the negative impacts of suburbanization, including not only high wildfire risk but also the degradation of the cultural landscape and growing water consumption. The fourth objective is to produce forms of local knowledge stemming from real-life problems while implementing the policy, aiming to facilitate social learning to enhance ecological transformation in a socially inclusive direction.

Chronological development and implementation of the practice

With the ongoing debate about wildfires started after the summer of 2003, the Town Council of Matadepera entrusted the drafting of a prevention scheme to one of the local firemen and volunteer of ADF who worked as forest engineer in the Catalan Ministry of the Environment. He was the bridge between the local knowledge of forests and fires and the expertise of the Catalan fire brigade's special unit on large fires (GRAF). A management scheme was prepared with joint work that combined fire modeling with forest planning, with the objective of preparing the social-ecological system to absorb fire events without major losses in structure and functions (ADF 2005). The scheme, including mechanical thinning, slashing, and crown pruning in about 100 ha of strategic areas regarding fire spread, was approved by the Town Council of Matadepera in 2005 and executed within two years with the general consent of forest landowners and the Natural Park, who saw it as an opportunity to improve their estates and to enhance habitats of special conservation interest, respectively.

In order to control sprouting and to keep a low fuel load in the thinned stands, ADF promoted the recovery of extensive grazing of sheep and goats, one of the most important economic activities of the region throughout the last millennia. The Town Council adopted the proposal and signed an agreement with the main forest landowners to use an old farmyard of their estate, which was restored with municipal funding. The Town Council delegated to ADF the hiring of a shepherd and the supervision of grazing in woodlands, fields, and stubbles, and provided ADF with funding and administrative support to help shepherd Paco from the Bages

County to graze his sheep flock in the woodlands of Matadepera. In collaboration with pasture ecologists from the Universitat Autònoma de Barcelona and the Local Environmental Council, a small monitoring plan was implemented, where the grazing pressure on plants and the effects of grazing on vegetation structure were measured (Màdico 2009). In April 2010, a new and younger goat shepherd substituted Paco, and is now managing a flock of about 200 heads. Besides the supervision of the management of pastures, the Town Council and the ADF work to connect the shepherd with networks of production and consumption of local and organic food to enhance direct sale and avoid intermediaries.

Cropland plays an important role as fire breaker and as a place to site extinction means in case of emergency. This is why some of the remnant fields in the municipality saved from urbanization, both from the Town Council and from private owners, are now ploughed and sowed to produce fodder and grain for the flock, with ADF dealing with the management together with farmers from the region. Other municipal fields are used by a sharecropper family to grow organic vegetables that are sometimes sold in local networks. Besides the enhancement of the resilience to wildfires, extensive farming and grazing contribute to the conservation of habitats and species that motivated the designation of Sant Llorenç del Munt Mountains as a Natura 2000 site, such as Bonelli's Eagle, and also of other species and taxonomic groups not as media-friendly as the eagle but no less important: small mammals, butterflies, and birds.

This particular way of landscape management for wildfire prevention has been very much based on and enriched by memories of the practices performed by local peasants before abandoning their lands or being dispossessed by real estate developers. This memory – or heritage – refers to the historical- and place-specific set of social-ecological interactions – of human beings with one another and with their environment – and practices yielding diverse, autonomous, and resilient social-ecological systems, entailing valuable insights for the future. Throughout history such practices gave character, distinctiveness, and ecological diversity to landscapes, but they are no longer viable. This means that new management strategies should not try desperately to maintain or freeze traditional land-uses, but rather to lead the new social-ecological systems to the desired stability domains drawing on such heritage, in a process of adaptive co-management in which institutional arrangements and ecological knowledge are tested and revised in a dynamic, ongoing, and self-organized process of learning-by-doing for problem solving.

During the first years of such a process (see Background/Origins), the Local Environmental Council held interviews with local elders whose livelihoods once depended upon local cropland, livestock, forests, and water, and published a summary in its journal *Sotabosc* (literally meaning *Understorey*). After innumerable informal talks, excursions, meals, and knowledge-sharing with local elders, a set of interviews was formally designed in collaboration with the City Archives of Matadepera for the project *Memòries d'una feixa*, which aimed to recover the historical memory of the town. Interviews were held with 17 individuals born between 1913 and 1958, both from right- and left-wing political sympathies, who experienced specific events related to the prewar, Civil War, and Francoist periods, including landless peasants and forest day-laborers. A free access collection with the recordings and the transcriptions of the interviews was created and is now posted in the Archive's new website (www.matadepera.cat/arxiu).

The narratives provided by these works, disseminated through regional and local publications and conferences, were used as strong evidence that the municipality is now suffering the social

and ecological legacies of a wrong development pattern. In the northeast of the town core about 239 ha of low forested hills (almost 10% of the whole municipality) remained free from urbanization but were threatened by real estate interests. The Local Environmental Council started a campaign to involve the citizenship in the protection of the area. Elders joined. With more than 1300 signatures and 18 local and regional bodies supporting the cause, the Local Environmental Council asked the Town Council to protect the area from new developments, and the plenary approved the proposal by general consent on 14 May 2007. The area is now protected and managed to enhance its heritage, and might be included in the Natural Park of Sant Llorenç del Munt in the future. Examples of such management are the recovery of an old well by the Town Council (which provided an additional supply during the general water shortage of spring 2008), the conservation of tracks, and the restoration of singular elements of the cultural landscape.

Management practices, direct action, and scientific research are combined with environmental education within the Local Environmental Council, including a Botanical Garden created in 2005 and a program of conferences, courses, and guided trips done in collaboration with several local organizations and primary schools. The dissemination of the management strategy through conferences, the journal *Sotabosc*, and regular communications with the local, regional, and national media helps to overcome the urban view of landscapes as pristine nature and to achieve a harmonious reconciliation of diverse points of view. In a self-organizing process of action-research stemming from real-life problems, insider scientists working together with the local community produce knowledge that facilitates the social-ecological transformation in the desired direction. Besides being fed back into the setting from which it emerged, the knowledge is shared beyond such a setting. An effort is made to publish the results of action-research in local-regional journals, in the proceedings of the Natural Park periodical meetings, and in international journals.

Agents involved

This policy is being implemented by the councillorships of the Environment and Culture of the Town Council, in tight collaboration with the Local Environmental Council (*Consell Local de Medi Ambient*) and the Group of Forest Defense (*Agrupació de Defensa Forestal*). Other relevant actors include local farmers and shepherds, forest landowners, the Natural Park of Sant Llorenç del Munt, the Institute for Environmental Science and Technology of the Autonomous University of Barcelona, the Catalan fire brigade's special unit on large fires (GRAF), local primary schools, and the Department of the Environment of the Catalan Government.

Beneficiaries

In general, the population of Matadepera, especially those living in the high wildfire risk areas, as well as the tens of thousands of visitors coming to the Natural Park from the whole metropolitan area will benefit from a landscape with less fuel load and thus less wildfire hazard. Particularly, the social groups who most suffered from the social-ecological changes brought about in Matadepera during Franco's regime are considered key beneficiaries of this policy. The children from primary schools are benefiting from environmental education activities, and students from the high schools now have the chance to know more about the place in which they live through the interviews, documents, and other works that have been made available through this process. Biodiversity in fields, scrublands, and thinned forests will hopefully improve as more and more open habitats will be recovered and conserved.

Participation processes implemented

This is a self-organizing process of action-research involving different sectors of the local community, and was intended to go beyond the implementation of a single participatory process. The policy objectives (see initial sections) are implemented through a complex process that takes place at multiple levels of social organization and institutional levels, within a social network increasingly robust to ecological perturbations.

Institutionalization processes

Several documents, schemes, and agreements witness the institutionalization of the political process described above, and are the base upon which new institutional arrangements may arise. One of the most important ones is the approval by the Town Council of Matadepera of the forest management scheme prepared by the Group of Forest Defense (2005). Other important institutionalization steps are the formal agreements of land stewardship between the Town Council, the Group of Forest Defense, the shepherds, and the forest landowners. Regarding the fight against the encroachment of houses in the forests, it is worth mentioning the recently approved municipal urban planning scheme, which protects the remaining forests from suburbanization.

Financing

The Town Council of Matadepera finances 20,000 € annually for land stewardship including the work of the shepherd and the plowing, sowing, and harvesting of grain in the fields. The Catalan Ministry of the Environment invested about 100,000 € to implement the forest management scheme prepared by the Group of Forest Defense, including coppicing, crown pruning, and slashing of ground vegetation (2005-2007). The Ministry of Innovation, Universities and Enterprise of the Catalan Government paid to Iago Otero a doctoral fellowship (13,000 € annually for four years) to conduct his PhD studies.

Key results and achievements

The key achievements can be summarized as follows: (i) Creation of a free access database with local oral sources including peasants and forest day-laborers; (ii) Approval and execution of a forest management scheme including mechanical thinning, slashing, and crown pruning in about 100 ha of strategic areas regarding fire spread; (iii) Recovery of extensive grazing of sheep and goats as a tool to control sprouting and to keep a low fuel load in the coppiced stands; (iv) Implementation of a monitoring plan to measure the effects of grazing on vegetation structure and composition; (v) Successful citizenship involvement to prevent the urbanization of an area accounting for 10% of the municipality; (vi) Archaeological restoration of several old lime kilns as part of the social-ecological memory or heritage of the town; (vii) Creation of a Botanical Garden, a local journal, a program of environmental education, and media dissemination; (viii) Training of local environmental scientists in action-research for social-ecological transformation at the undergraduate, master, and doctoral levels; and (ix) Publication of the results in local, national, and international peer-reviewed journals.

Main obstacles

This strategy of social-ecological transformation is difficult to implement in a metropolitan wealthy suburb where most inhabitants hold an urban vision of pristine nature and have a poor knowledge of the natural environment and the social struggles hidden behind the current landscape. Moreover, unlike 'normal science', which is done for the public at large, this type of political action, including knowledge generation (action-research), is supposedly done for the community. But community is a notoriously problematic notion and the question 'who are we

working for' is pertinent and merits reflection (Otero et al. in prep.). In a certain way, many people are working on a voluntary basis for the protection of wealthy houses and their wonderful vistas from fire. Other obstacles include institutional and social inertia in landscape and urban planning, as well as the inherited impacts of low-density suburbanization.

Replicability or adaptation of policy elsewhere

The policy as it is being developed in Matadepera cannot be simply replicated anywhere, as it emerges from a locally specific social-ecological assemblage responding in a particular way to a concrete perturbation or crisis (Sant Llorenç's large wildfire). However, some principles and recommendations can guide similar policies in Mediterranean mountain areas with comparable environmental histories. The first one is that a comprehensive understanding of the social-ecological system, including the regime of perturbations and the way people have interacted with the local biophysical environment throughout history, is crucial. This usually means a change from the classical paradigm based on the total control of nature to a management that takes into account perturbations and surprises in the dynamics of social-ecological systems. The second one is the need to go beyond the top-down or bottom-up divide in the implementation of policies, and to forget buzzwords such as 'participatory processes'. Instead, understand that there are self-organizing social networks at multiple spatial scales and institutional levels within a political process where alternative futures are negotiated. Finally, binary distinctions such as between formal and informal knowledge, scientists and laypeople, or knowledge and action have to be transcended by a new breed of individuals and collectives in the production of counter-assemblages that redefine material and discursive relationships and challenge dominant ones (Otero et al. in prep.).

SUMMARY

Recovery of social-ecological memory for building resilience to wildfires in the municipality of Matadepera (Barcelona Metropolitan Region)

October 2003 - ongoing

This policy aims to build a social-ecological system being able to absorb fire events without major losses in structure and functions, through the recovery of the practices once performed by local peasants in the municipality of Matadepera. The first objective is to decrease the fuel load in strategic areas through a variety of forestry techniques, extensive farming, and grazing so as to reduce potential fire intensity while enhancing habitats and species of special conservation interest. The second objective is to recover personal memories from those social groups worst hit by the suburbanization of the countryside and to enhance their social inclusion, especially the peasantry defeated in the Spanish Civil War, whose knowledge and practices are indispensable to enhance the resilience to wildfires. The third objective is to definitively stop the encroachment of developments in the forests and to reverse the negative impacts of suburbanization. The fourth objective is to produce forms of local knowledge stemming from real-life problems while implementing the policy, aimed at facilitating social learning to enhance transformation in a socially inclusive direction. In general, the population of Matadepera, especially those living in the high wildfire risk areas, as well as the tens of thousands of visitors coming to the Natural Park from the whole metropolitan area will benefit from a landscape with less fuel load and thus less wildfire hazard. Particularly, the social groups who most suffered from the social-ecological changes brought about in Matadepera during Franco's regime (urbanization and gentrification) are considered key beneficiaries of this policy. The children from primary schools are benefiting from environmental education activities, and students from

the high schools have now the chance to know more about the place in which they live through the interviews, documents, and other works that have been made available through this process.

This is a self-organizing political process that takes place at multiple spatial scales and institutional levels, intended to go beyond the implementation of a single participatory process. Several documents, schemes, and agreements witness the institutionalization of such a process. One of the most important ones is the approval by the Town Council of Matadepera of the forest management scheme prepared by the Group of Forest Defense (2005). Other important institutionalization steps are the formal agreements of land stewardship between the Town Council, the Group of Forest Defense, the shepherds, and the forest landowners. Regarding the fight against the encroachment of houses in the forests, it is worth mentioning the recently approved municipal urban planning scheme, which protects the remaining forests from suburbanization. Financing came mainly from the Catalan Ministry of the Environment (100,000 €) and the Town Council of Matadepera (20,000 € annually since 2007). Key achievements include the creation of a free access database with local oral sources including peasants and forest day-laborers; the approval and execution of a forest management scheme; the recovery of extensive grazing of sheep and goats as a tool to control sprouting and to keep a low fuel load; a citizenship campaign to prevent the urbanization of an area accounting for 10% of the municipality; and the archaeological restoration of several old lime kilns as part of the social-ecological memory of the town. The main obstacle in implementing this policy is the urban vision of pristine nature and poor knowledge of the natural environment and the social struggles hidden behind the current landscape.

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Acknowledgements / Credits

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