Bushfire Management, Culture and Ecological Modernisation in Ghana

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1 Introduction

Hajer (1995) argues that the 1980s have seen the rise of a new form of policy-oriented discourse in environmental politics, which he (among others) labels ecological modernisation. The underlying principle of ecological modernisation is that economic growth and ecological crisis can be reconciled in one framework, in which nature is considered a public resource rather than a free good. The environment can be managed within a framework of liberalised markets and neo-liberal market economic theory rooted in ecological theory, in which polluters can be made to pay the 'real cost' of their damage to the environment. This will promote greater efficiency of production and the innovation of more environmentally friendly technology and 'green products', which can achieve premium prices and open up new market opportunities. The capacities of modern science and technology and of development administration will enable society to gain better control over the environment provided that citizens and civil society organisations participate in the implementation of environmental policy. Hence, the development of new forms of citizen participation in decision-making and an emphasis on marginalised groups, including women, smallholder farmers and 'indigenous' people, have become major foci of ecological modernisation.

In ecological modernisation the environment is conceptualised as a management problem. The solution is to bring a range of new actors ('stake-holders') into environmental debates, including scientific experts, local residents, environmental organisations, and non-governmental organisations (NGOs) and to engage them in developing a policy discourse. Hajer (1995) argues that ecological modernisation works by building discourse coalitions between a wide range of actors who have different concerns and different modes of expressing and articulating problems. The actors and organisations involved in environmental politics come from a variety of social and disciplinary backgrounds, reflecting different lifestyles. To be able to understand each other they need to present complex discipline-bound scientific findings in non-scientific language. To achieve this they develop *story-lines*, which convert scientific information into symbols. These symbols refer to social and moral orders, allocate blame to

particular actors for environmental problems and act as a call to action. Actors in environmental politics position themselves as problem-solvers by adapting story-lines and building coalitions with other actors ascribing to this story-line. They also position other actors by linking them into the story-line or blocking and marginalising their stories. The story-lines, which they adapt, empower them to act in the name of preserving the environment.

Around these story-lines, a series of discursive practices develops which seeks to gain influence over environmental politics, to create new institutions for environmental management, to redefine environmental problems in ways which allow for specific technical solutions or political interventions, and to bring about social and institutional restructuring. Therefore, a study of the discourse coalitions and the story-lines they improvise around environmental policies reveals the social forces behind ecological modernism (Hajer 1996), as well as a great deal about science/policy processes. While Hajer's research largely focuses on Europe, this article argues that similar forces of ecological modernisation are at work in Africa, and that the development of decentralised development administration, popular participation and sustainable development occurs within this framework of building discourse coalitions. This paper examines discursive practices around bushfire control in Ghana and the implications of these activities for the political and socio-economic restructuring of rural life.

2 Ecological modernisation in Ghana

The rise of ecological modernisation in Ghana is reflected in the news media. During the 1970s and 1980s few environmental stories were carried in the state press. However, during the 1990s environmental stories became numerous, appearing on an almost daily basis. These stories usually document harmful practices carried out by rural folk, and call for the adoption of new ways of doing things and adoption of new environmental technologies. The dominant themes are how forests are being destroyed by the activities of farmers (particularly shifting cultivators), hunters, small-scale miners, palm-wine tappers and so on, and how these activities need to

be replaced with modern livelihoods, including agroforestry, community woodlots, apiculture, and the rearing of small rodents, snails and mushrooms – all of which have become the domains of specialised NGOs and government extension services. Even when large companies are known to be at the forefront of environmentally destructive activities, it is usually stories about the destructive activities of small producers which receive the most attention. Blame looms large in these environmental stories and frequently the 'unenlightened peasantry' are depicted as the villains. Stories about bushfires are the most common environmental narratives, and these occur in a characteristic format, which defines the various anti-social and backward practices that promote bushfires and threaten the forest with desertification.

In Ghana, the roots of ecological modernisation can be traced back to the bushfires of 1982/83, when for the first time in living memory large tracts of moist forest burned. The effect of these bushfires was amplified by other events surrounding the political upheavals which resulted in the 31 December 1981 *Coup d'etat*, which brought Rawlings to power for the second time as leader of the Provisional National Defence Council (PNDC). The country was in financial crisis and relations with the USA were strained, leading to uncertainty about aid. There was a prolonged drought in 1982 and this event, compounded by the expulsion of two million Ghanaians from Nigeria, resulted in food shortage and little food aid. The populist PNDC government organised People's Defence Committees throughout the rural areas. These took up voluntaristic development activities and attempted to control the hoarding and profiteering on state subsidised commodities which were prevalent features of that period. This populist, voluntaristic military spirit was extended into the fight against bushfire.

2.1 Institutionalising fire control in rural communities

The government set up a National Anti-Bushfire Committee (NABFC) in 1983, which was co-ordinated by the Environmental Protection Council. The NABFC was mandated to set up guidelines for the operation of regional, district, town and village Anti-Bush Fire Committees and to provide technical support to these committees. The

NABFC made recommendations for the setting up of the Fire Volunteer Squads in every village. The Fire Service was made responsible for mobilising the village populations within the districts to form Fire Volunteer Squads and for training them (Akyea 1987). Training included military drills and rudimentary fire fighting techniques. However, no protective clothing or fire fighting equipment was provided for the Fire Volunteers. The Government also enacted the 1983 Control of Bush Fires Law (PNDCL 46), which bans the setting of fire for any purpose other than the burning of farm slash or the management of forest and game reserves under the authorisation of the Chief Conservator of Forests or the Chief Game and Wildlife Officer. The law specifies that the use of fire must be 'controlled and confined within the boundaries of the farm and does not exceed the purposes for which the fire is permitted'. The law provides stiff penalties for transgressors. They are liable to pay all the costs of the damages caused by the fire they were responsible for, a fine, or up to five years in prison.

As the democratic and bureaucratic structures of decentralisation began to develop in the late 1980s under IMF prescribed structural adjustment policies, and Fire Volunteer squads began to spread, a new institutional structure for the management of fire was created. It was realised that fire could not be managed by edict alone and that its control was an institutional issue. In 1990 the Control and Prevention of Bushfires Law (PNDC LAW 229) was enacted. This law obliges all district assemblies (local councils) to establish a Bushfire Control Sub-committee under the Executive Committee of the District Assembly. Members of the District Assembly serve on this committee, alongside officials from the decentralised government, including representatives from the Fire, Forestry, Wildlife, Agriculture and Animal Health and Production services. The Bushfire Control Sub-committee is empowered to draw up bye-laws for the control of fire in the district; specify the periods in the year when burning of farm slash, grass and dead wood are to be prohibited; draw up early burning programmes where appropriate; set up community Bushfire Control Committees; educate residents within the district on the hazards of uncontrolled fires, and collect and compile data on outbreaks of fire within the district. Many bye-laws prohibit farmers from burning slash without the paid supervision of the fire volunteers, and make it illegal for palm-wine tappers to use fire in the dry season, or for farmers to carry matches to the farm or cook in the field in the dry season. The regional branches of the Environmental Protection Agency also play a key role in educating the public on the environment and developing campaigns about the control of fire. In this new setting, the Fire Volunteers have become responsible for implementing and enforcing local bye-laws drawn up by the district assembly.

2.2 Science and cultural discourses on fire

The second important event defining the development of ecological modernisation in Ghana was the publication in 1985 by the State Publishing Corporation of *Bush Fire and Agricultural Development* (Korem 1985). While the book was published after the 1982/83 bushfire, it was clearly written before. It does not refer to the 1982/83 bushfire, but rather to the 1976/77 bushfires which affected northern Ghana and the forest-savanna transition zone at the height of the Sahelian drought. This book was given high profile in the state media and also by the president. Albim Korem came to Ghana in 1971 as a Canadian University Service Oversees Volunteer and has lived in Ghana since. He was of Czechoslovakian origin, where he studied agriculture. He first worked at Bagabaga (agricultural) College in Tamale, and more recently as an environmental and agricultural journalist, with a column on agriculture in the *Spectator*. Korem is a firm proponent of organic agriculture rooted in a notion of 'nature's law of return'. He would have found support for these views in the agricultural milieu of northern Ghana, particularly in the large number of agricultural projects and stations set up by church-based organisations in the Northern and Upper Regions. These church organisations have sought to promote organic agriculture, based on composting techniques and soil and water conservation, continuing a colonial tradition which stands against the existing practices of farmers and which was discontinued by the postcolonial agricultural services in preference for high input agriculture. On his arrival in Ghana, Korem was struck by the use of fire in agriculture:

After my arrival back in Tamale, I found all the grasses around burnt into black ashes. Being ignorant about bush fires practised in Ghana, I wondered what animals would eat during the dry season; I did not understand how people could benefit from such practice (Korem 1985: xiii).

Korem responded to culture shock by deciding to undertake independent research into bush burning in Ghana. He travelled over 5,000 km interviewing farmers, chiefs, missionaries, government officials, students and agriculturalists. This research tour formed the basis for *Bush Fire and Agricultural Development*, which is a polemic against the use of fire in agriculture and other forms of natural resource management. Korem makes no attempt to understand the rationale of bush burning: 'In this publication I am not going to philosophise about what time of year is the best for burning, but rather why and how bush fires must be prevented' (Korem 1985: xv). Korem was not interested in the ecology of fire and its potential uses in managing habitats. He was rather more interested in launching a campaign, which would lead to the eventual banning of bush burning:

It is unfortunate that almost any booklet or book dealing with bush fires recommend early burning as the final solution for the protection of our forest reserves in the savanna area against late accidental burning. But is this the proper solution?

What is the difference between early and late burning? Well, early burning is a smaller evil and late burning a bigger evil. But can we succeed in our anti-bush fire campaign by fighting a big evil (late burning) with a smaller evil (early burning)? Of course not.

Our aim should be to protect our forest reserves against any kind of burning (Korem 1985: 141).

The publication describes indiscriminate burning in Ghana, by farmers, hunters, wild honey collectors, palm-wine tappers, charcoal burners and so on. Burning is firmly associated with destruction and environmental degradation, and seen as a bad habit, the product of backward culture:

Many people burn the bush or grass because it is customary to do so. Probably some people cannot resist the urge to set fire to dry grass ... We have to do everything possible to make the burning of bush and grass a custom of the past and non-burning a custom of the present (Korem 1985: 138).

Korem backs up his diatribe against burning with references to crisis narratives from the colonial period. He holds up the non-burn policies of the late 1940s and early1950s as model environmental policies and bemoans the fact that they were relaxed.

This work has been highly influential in defining management strategies for bushfire control. For example, it is the most quoted work in *Strategies for Bushfire Intervention in Ghana* (Yankson *et al.* 1998). It is also heavily cited in the European Union environmental education programme (PACIPE) sponsored publication *Challenges of Bushfire Control and Prevention in Northern Ghana* (Al-Hassan and Saarka 1999). Its main influence has been to define bushfire as a social-cultural problem rooted in unreflective customary norms which needs to be tackled by cultural education. Korem's adherence to beliefs rooted in organic agriculture are accepted as constituting a rational core of knowledge, which needs to replace backward methods of agriculture. His uncritical adoption of colonial crisis narratives of fire and approval of colonial anti-fire policies in northern Ghana are often repeated by other analysts, reproducing his quotations. His attempts to block the scientific research of the terminal colonial period and early post-colonial period as irrelevant and academic are frequently repeated. His rejection of controlled burning is now the dominant forestry policy. Hawthorne and Abu-Juam (1995) write that during the 1980s, 30 per cent of forest cover has been lost as a result of fire. They argue that:

Early burning as a management tool (to reduce the ferocity of late dry season fires in vegetation near the forest savanna boundary is the lesser of two evils, but nevertheless is still a negative influence on forest regeneration in itself and contributes to deforestation ... Early burning might, if done early enough, help maintain 'transitional forest' on the extremities of the forest zone, but most often seems to encourage

grasses of the type that mark the end of forest permanently; complete fire exclusion is the best solution and is likely to bring good ecological and economic rewards (Hawthorne and Abu-Juam 1995:18).

The cultural roots of burning as a theme is amplified by a number of writers. In one of the more substantial contributions to *Strategies for Bushfire Intervention in Ghana*, Ampadu-Agyei and Atsiatorme (1998), then working in the EPA, argue that burning is a cultural phenomenon that permeates rural Ghana:

> Attempts to prevent, control or mitigate bushfires in the country have so far been rather superficial, mediocre and unsuccessful. The analysis shows that the culture of burning is entrenched in the socio-economic life of Ghanaian society. Indiscriminate burning is a cultural problem – a problem of human behaviour.... Therefore, a solution must be found in traditional culture and education to influence human behaviour (Ampadu-Agyei and Atsiatorme 1998: 25).

They attribute the high incidence of bushfire in northern Ghana to the cultural beliefs of the people:

> It is believed in many parts of northern Ghana that if the bush is not burnt, the spirits will do it for the ancestors do not like to walk in the bush. It is perhaps, the reason why the Northern region has always recorded the highest incidence of bushfires in Ghana (Ampadu-Agyei and Atsiatorme 1998: 18).

Similarly, Reverend Father Jon Kirby (1999), Director of the Tamale Institute for Cross Cultural Studies, cites Korem (1985) and argues that bush-burning is so ingrained in the cultural psychology of the people that it cannot be counteracted by rational argument (based on western scientific epistemology) and will continue: 'until the ancestors sanction against burning' (Kirby 1999: 137). He cites the example of a chief who not only fined his subjects for burning the bush, but organised the 'earth priests' to ban burning. He advocates involving local religious leaders in anti-bushfire campaigns to develop taboos or oaths against bush burning.

A related theme originating with Korem is a nostalgia for colonial anti-burn policies in northern Ghana. Korem devotes large sections of his book to showing their wisdom, and these story-lines are quoted by a number of commentators. For example, Ampadu-Agyei and Atsiatorme (1998) write:

> The effects of bush burning have been recognised as far back as 1922 when F. Chip (*sic*) a British administrator for the northern Ghana is believed to have commented in his hand book that "Thus with man's assistance, aided by the great annual fires that sweep through the Sudanese zone grassland, and desiccating influences of the Harmattan, the forest is steadily receding" (Korem 1985). The British Colonial government was very much concerned about the indiscriminate bushfires but it was not until 1934, that serious attempts were made to stop bushfires particularly in the then Northern Territories.... The period of the greatest success against bush-fires coincided with the term of the agricultural officer Mr Jones H. Hinds in the 1920s (Chip 1922[1]). Mr Jones was convinced of the dangers of fires to the Ghanaian ecology and maintained a systematic programme of rural education to combat it. His assistants were required to educate villagers on the prevention of bushfires while the Chiefs were held responsible for all the bushfires in the areas. The chiefs therefore encouraged the people to obey the laws (Ampadu-Agyei and Atsiatorme 1998: 23).

Implicit in this nostalgia for colonial policy is a desire for the tight administrative controls over the rural population that characterised the Indirect Rule/Native Administration system, and a role for chiefs in exercising these controls. One of the shortcomings identified by Ampadu-Agyei and Atsiatorme (1998) in the framework for bushfire control is a lack of recognition in law of the role of chiefs, as custodians of the land, in the management of bushfires.

2.3 Building the anti-bushfire discourse coalition

A coalition against bushfires has gradually been built through a series of workshops sponsored by

donors. The most important of these have been the 1988 'Seminar on Bush Fires In West Africa: The Human Factor' (UNESCO and Faculty of Social Science of University of Cape Coast 1988), the 1998 'National Workshop for Strategies for Bushfire Intervention in Ghana' (Yankson *et al.* 1998), and the 2001 'Workshop on Wildfire Management Project in the Transition Zone: Engaging Stakeholders in a Collaborative Relationship with the Project' (NRMP 2001). These are not academic but policy-oriented workshops, which seek to build a coalition to control bushfires and the use of fire by rural people. They involve government services personnel, including the EPA, the Fire Department, the Forestry Services and the Ministry of Agriculture, along with various university researchers, NGOs, the media, district assemblies (authorities) and chiefs.

The origins of this discourse coalition lie in a relationship between the Geography Department of Cape Coast University and the Fire Service, based around organising the Fire Volunteers. The EPA has played an important role in adding direction to and shaping these workshops and bringing them into line with global environmental concerns. The EPA has itself been influenced by global environmental organisations, such as UNDP, which has helped it to develop its capacity in line with global initiatives, and to develop an Environmental Action Plan for Ghana.

In these workshops a number of meta-narratives are constructed, detailing the harmful effects of bushfire; the activities that cause bushfires; their main perpetrators; the roots of bushfires in cultural psychology, and the need to bring about a transformation through institutional arrangements, which control the use of fire effectively. New members of this coalition develop their own story-lines within workshop presentations or in mission statements, which improvise upon the dominant themes within the discourse coalition. These story-lines identify a niche, which they can occupy and genealogical symbols, which link them into the dominant symbols of the coalition. This empowers them to act as a member of the coalition, sanctified by the state and the world of international development assistance. This in turn, opens up access to funding for projects and other support mechanisms for their activities.

A good example of this process of developing the genealogy of a story-line is provided by the paper presented by Salifu (1998) at the Workshop on Strategies for Bushfire Intervention, on behalf of Amasachina, an NGO operating in Northern Ghana. Salifu writes:

> Amasachina's early education efforts were hampered by traditional cultural beliefs since many myths were linked to tree planting. For example, it was thought that when a tree grew taller than the person who planted it, that person would die; or if a young person planted a tree, he/she would not live to see the tree bearing fruits. It was also very necessary to first convince communities' opinion leaders and elders on the importance of preventing bush fires. From experience, Amasachina animators learned that once these leaders were informed, and convinced of the importance of education on effective bush burning practices, it would become easier to educate their communities (Salifu 1998: 69).

This story-line links itself with the dominant discourse by narrating long-term experiences with tree planting that share kinship with the discourse being created around fire. It weaves its story around the threads of the need for cultural change and the need to change traditional practices by working with community leaders. Through this story-line Amasachina establishes its credentials of having long-term experience in working with cultural change and the environment, and pledges to work to bring the traditional leaders in its realm into the coalition for fire control, with the explicit aim of changing existing cultural practices in the use of fire.

2.4 Bushfire management in the Upper East Region of Ghana

The campaign against bushfires has been most effectively implemented by the district assemblies in the Upper East and Upper West Regions of Ghana. A number of non-burn districts have come into existence with bye-laws against the burning of farm rubble. Bongo is a prime example of a non-burn district and in 1998 it won a national award for its no-burn policies. According to representatives of the Bongo District Assembly it took up the challenge of organising Fire Volunteers in its various

settlements seriously in 1994 when it realised that the environment was becoming seriously degraded. It has also implemented bye-laws banning burning of farm rubble, with severe deterrents: transgressors could be fined the equivalent of US$40 in 1999, a substantial sum for people in the district. However, the chiefs in the villages have also been empowered to mete out punishment to transgressors. The chief and elders can judge the cases brought to them and fine transgressors in cash or livestock, the main capital asset in the area. Whether to send a culprit to the Assembly for punishment or deal with the case themselves is at the discretion of the chiefs and Fire Volunteers. Transgressors that are unwilling or unable to pay the fine are sent to the district capital for punishment. Through joining the discourse coalition against bushfires, as custodians of communities and land, the chiefs are once more being empowered – as they were in the colonial period.

The Bongo District Assembly and the Fire Volunteers are keen to emphasise their role in bringing about changing attitudes to bush burning. They argue that non-burn policies have resulted because of their interventions in educating the population, and because of the information provided by the mass media, non-formal education and agricultural services on the dangers of burning and the merits of organic farming.

However, discussions with farmers reveal other factors at play. Bongo is one of the highest populated districts in Ghana with over 250 people per km². As a result, farming is intensive – largely on permanent compound farms – and shifting cultivation is not the norm. Mixed farming is important and cow manure is used to maintain fertility. During the 1970s and 1980s, many farmers adopted bullock ploughing and began to change their land clearing techniques. Instead of burning farm rubble, they ploughed it into the soil. During the late 1970s, with erratic rainfall and increasing desiccation, some of the grasses used as livestock fodder and for roofing became less profuse and were replaced by other grasses. To attempt to restock these grasses, many farmers began to stop burning on their farms. Thus the anti-burning discourse coalition has attempted to take the credit for practices that evolved independent of its activities, and which developed before the coalition had got underway.

While a large proportion of farmers in Bongo district are not burning, some still are, despite the fact that on-farm fire has been criminalised. Moreover, there are lively debates among farmers about the merits and demerits of burning. These often combine knowledge gained from local experience with information gained from the media, or hearsay, such as 'I don't burn because I want to preserve grasses. I have also heard it said that if you don't burn and let your rubble decompose into the soil you will get better yields.' Some farmers who no longer burn recognise that in particular locations (e.g. where there are many hard woody species or where soils are clayey) burning would be still the best. One local farmer, who has acquired a reputation as a tree grower largely from his attempts to grow all manner of tropical forest trees in savanna country, including oil palms and avocado, still burns. He argues that he has to burn because of the nature of the wet clayey soils of his land. Clearly, many factors need to be taken into consideration beyond a blanketing of the environment into a uniform medium in which one set of global policies can be applied.

In contrast with the lively debates among farmers, the messages transmitted by the District Assembly, the Non-Formal Education Services and Agricultural Department are often highly simplistic, one-dimensional slogans, which do little to raise consciousness. Moreover, the personnel in these services frequently have extremely limited sources of information on the environment. The presenter of environmental programmes at the regional radio station, for example, identifies the state daily newspapers as his source of environmental information. In spite of this slender knowledge base, the anti-fire discourse coalition transmits its simplistic messages with complete confidence and with recourse to discourse partners who have control over administrative and punitive power. This results in the closing down of debates on fire. Many of the youth, who form the backbone of the Fire Volunteers, have been educated in schools about the cultural ills of fire. They have become intolerant of the use of fire, which they consider to be culturally backward and rustic. Since the anti-bushfire discourse strengthens the power of chiefs and the District Assembly over the rural population they have become firm converts to its objectives.

3 Fire research and policy

In contrast with the lively local level debates in Bongo district on the merits and demerits of fire, little debate occurs in national-level research and policy fora. Here it is assumed that fire is an evil that must be purged from farming systems. There is a significant literature from the 1950s and 1960s in Ghana and Africa that began to re-evaluate the ecological role of fire, and to question government policies that banned it.[2] Instead of being reflected upon, this literature, based on the most serious research to date on the ecology of fire, is deliberately blocked from entering discourses on fire control. This can be seen in the above quotes from Korem and Kirby, which give the impression that fire ecology is a sterile academic discipline which is irrelevant for development policy and for people who wish to improve the world. Yet in the USA, with its refined development of science and technology, fire policy has been carried out with an intrinsic recognition of the importance of fire in the ecology of forests and with the aim of restoring fire to wildlands (Pyne 1997).

In Ghana, research programmes are now underway, which are concerned with looking at fire and its role in farming systems. However, this is not carried out within an open framework, but one that starts from certain premises. Thus the ITTO (International Tropical Timber Organisation) have funded a Forest Fire Management Project in Ghana, which is being implemented by the Resource Management Support Centre of the Ghana Forest Services, the Forestry Research Institute of Ghana, the USDA Forest Service and the University of Ghana. This includes research into 'indigenous knowledge' of fire and its impact on local communities. However, this local level research is framed within the context of developing appropriate fire prevention and control programmes with the local community, and with the aim of designing improved farm clearing techniques which will replace burning (NRMP 2001). This will also fit into a programme in which surveillance technologies (based on Geographical Information Systems and satellite imagery) and wildfire-prevention educational programmes will be put in place alongside the Fire Volunteers to develop more effective policing of fire.

Jasanoff and Wynne (1998) argue that scientist-politicians often lay the ground rules for cognitive and political participation under the guise of elaborating research programmes. The research programmes define the boundaries that frame knowledge, valid information and the choices in decision-making. This is clearly evident in the evolution of approaches to fire management in Ghana, which define both the institutional forms through which communities must participate in fire control and the boundaries of knowledge in which decisions about fire are made. These decisions are made in a framework which claims to promote local control over resources, decentralisation and community participation. But the discourses and forms of participation developed are those which close down debate and encourage authoritarian imposition in the name of the public good, 'our common future', or the global environment.

Before the rise of ecological modernisation, agricultural modernisation formed the dominant development policy in rural areas. Agricultural modernisation sought to promote a stratum of progressive farmers, who were the main target of new 'green revolution' technologies. It was presumed that through the demonstration effect of increased yields and higher farm profits these new technologies would 'trickle down' to the mass of small-scale farmers. In many regions, this trickle down effect never occurred, since the technologies were poorly adjusted to prevailing conditions, although this was initially blamed on the backwardness of the peasantry. In contrast with this, ecological modernisation seeks to change the whole practice of the rural area and introduce new green technologies, which have been manufactured in global environmental centres as technocratic solutions. It does this by linking backwardness politically with the relationship between people and nature. Ecological modernisation seeks to intervene at the level of the utilisation of natural resources in production. This contrasts with agricultural modernisation, which sought to intervene at the level of choices about technology utilisation. Ecological modernisation thus intervenes more directly than in earlier modernisation approaches. It creates a political alliance with a section of the rural population who are empowered to represent 'the community', and to take actions in community interest against those who disregard the environment and the public good. These community-based coalition allies may have access to punitive and legislative power to impose

directives on the community. This is reinforced by mass education campaigns which exhort rural people to adapt more enlightened ways. However, these directives no longer emanate from national plans and programmes but from the world of global development. Organisations such as the Ghanaian EPA may be constructed in the image of the US Environmental Protection Agency to play the role of translating global conventions into national idioms. Although they are nation-state institutions, they shape regional and district environmental institutions in accord with global policy.

All this is carried out on the basis of slender research into ecological conditions within the nation state. The policy directives tend to develop out of the need to build a global system of environmental administration with institutional consistency, and a hierarchical dissemination of information from global surveillance information systems to local outstations. This frequently results in the presentation of simplistic data which may measure fire impact in terms of the number of hectares of pristine forest lost to fire, without looking at the complex historical processes of vegetation change and transformation, and the role of fire and of people in the composition of the forests of the previous two centuries. This also leads to scientific policies that lack reflexivity,

searching desperately for hegemonic influence rather than learning lessons from past mistakes. Perhaps policies will be created that will succeed through fear in extinguishing burning on farms, but the banning of farm fire will not lead to the end of fire, and may exacerbate the problem by leading to the build-up of fuel sources on farms and frustration among farmers. The new discourse coalition on fire has created many black boxes (Latour 1989). If we were to take a walk into the 'no go' areas of late colonial and early post-colonial reflexive thinking on the follies of colonial fire policy, we might also realise the folly of present endeavours to banish fire in environments that have been shaped by fire and anthropogenic fire from time immemorial. Some of these black boxes would begin to open.

But these discourses are not only about fire. They are also about the role of cultural regulation in political and development administration, and this is critical in understanding their tenacity. Nevertheless, the best options for rural political or decentralised administration must be to build platforms that encourage debate; that enable different perspectives to be presented and allow policies to be challenged and questioned, rather than the present-day quest for hegemonic implementation of politically-dominant global policies.

Notes

1. Note that this citation is taken from Korem (1985) and not directly from Chipp.

2. This includes Stewart (1944); Jeffries (1945); de Schlippe (1956); Guilloteau (1957); Nye and Greenland (1960); Ramsay and Rose Innes (1963); Allen (1965).

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