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## The institutionalisation of pesticide reduction in France.

### The sub-politics of building futures based on a critique of neo-corporatism

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#### Introduction

Over the past decade there has been a vivid interests in social studies of technological change (Rip and Kemp, 1998), with a particular focus on sociotechnical transitions (Geels , 2002; Elzen & al., 2004) related to the major expectations that sustainable development objectives give rise to in many sectors of the economy (Smith et al., 2005; Geels, 2010). Various analysis of these changes are proposed at large scales, notably those that emphasize the need for reflexivity by the actors and stakeholders (Voß, Bauknecht, and Kemp, 2006) and for a transgression in the political use of scientific knowledge (Hoppe, 2005). If novelty, innovation and breakthroughs are profoundly positively attached to the promises that ground transitions, the critique of existing sociotechnical regime is usually understood as coming from the “outside” of the regime (from political landscape or niches). Our hypothesis is that politics of the futures that are back-casted in the present induce policies of the present, but the latter can not avoid a critique if not a de-structuration of the pillars of modernity and hence for actors inside the regime to re-open the black boxes of previous rationalisation processes outcomes, hence many subpolitics are at play inside a given sociotechnical regime. In this paper we shed light on the emergence and implementation of a public policy

instrument designed to promote significant changes in crop protection practices through the reduction of pesticide uses.

This communication will start with a re-examination of the concept of subpolitics in order to later on deliver some fruitful insights in the case of pesticide use reduction. Since the subpolitics of reduction conveys the whole functioning of sectorial policy and its constitution in terms of corporatist arrangements, a detour throughout the sociological account of neo-corporatist socio-historical roots is proposed in order to account for the sub-politics of building a future with less or no pesticide based on a critique of neo-corporatism which is not purely exogenous to the agricultural sector. We shall then present some of our empirical findings in order to ground our reflection on the pathways of a de-institutionalisation process. This communication is thus rather an attempt to frame a sociological account of a process of change in a sectorial agricultural policy which is quite embarrassed with the objective of reducing pesticide uses. It take part to a wider collective scientific enterprise of developing a scope of transition studies in agriculture (Barbier and Elzen, 2012; Elzen et al. 2017).

## **1. From Subpolitics to ecological modernization**

There has been already a lot of interesting comments and development of the notion of subpolitics that Beck (1986) has issued to describe a distinctive field of political action accompanying the loss of function of the traditional political system to face the ecological crisis. Beck (1992: 52) propose to shift the glance on politics from formal politics to form of political practice “that remains to be comprehended and developped, as sub(system)politics (Beck, 1992) in all the other fields of society”. Concommitary to the emergence of this notion, alternative lines of action have become thinkable within the environmental movements also engaged in alternative pathways for the future. This momentum has hence been analysed as « ecological modernization », not without contentions and discussion.

For us, this gain in autonomy by subpolitics recalls what Anthony Giddens has called reflexive consciouness to account for the possibility of thinking individuals voicing against the presumption that the indenpendance of systems from individuals takes place in the thought and action of

individuals, and not in bureaucratic order changes (the self-referentiality of political system)<sup>1</sup>. In that sense both U.Beck and A.Giddens are not strictly weberian, but neo-weberian since they consider an embedded autonomy in state-society synergy. The emergence of subpolitics has been also witness by “proof of concept” like the Shell Boycott in 1996 which has played a crucial role to re-associate Politics and morality against expert reasoning and deliver public proof of the mechanism of subpoliticization by witnessing the efficiency of pressure of the alliance of subsystems of power.

Concomitantly A.P. Mol and G. Spaargaren have been played a key role in giving sense to the conceptualisation of ecological modernization (Spaargaren and Mol, 1992) and displacing the intellectual way of thinking from the tread mill of production systemic critique of the Schnaiberg Group (Schnaiberg et al. 1999) to more multi-level sociological approach of institutional transformations in between and beyond state and market, underlying after U.Beck: *“the increasing importance of politics outside and beyond the formal political institutions of parliament, political parties and bureaucracy»* (Mol , 2000). A. Mol and G. Spaargaren have stressed the importance of paying attention comparatively to state structures and to policy networks and to policy cultures of subpolitics, which sustain processes of ecological modernization. Therefore we follow F.H. Buttel comments on ecological modernization<sup>2</sup> advising: *« I would argue that the way forward for ecological modernization is not to emphasize empirical debates over the potentials and limits of environmental engineering and industrial ecology, but rather to deepen the links to political-sociological literatures which will suggest new research problems and hypotheses »* (Buttel, 2000).

Under such a legacy, we ought to take into account the way the notion of subpolitics has been operated in empirical research, and notably by Holzer and Sorensen (2003). For this authors the source of societal influence - either from subpolitics or formal politics- are not fully absorbed by the formal political process, though scientific expertise, corporate decision-making and individual consumption choices still stick to the iron cage of formal bureaucratic politics. Their point of view is relevant for our purpose on pesticide reduction subpolitics, since they consider subpolitics as being inherently Janus-faced because *“the way in which non-political decisions made in societal spheres such as the economy or science may nonetheless become ‘subpolitical’ on the one hand and the emergence of the phenomenon of ‘political consumerism’ on the other”* (Holzer and Sorensen, 2001).

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<sup>1</sup> This issue can be considerably enriched by the theoretical and comparative account proposed by Dawson (2010) about Bauman, Beck and Giddens and their conceptualisation of politics in late modernity. The question put forward is the ‘disembedded’ over an ‘embedded’ definition of individualization and biographic individuation in late modernity.

<sup>2</sup> See the very stimulating comment of Buttel (2000) about the Mol- Spaargaren’s ecological modernization perspective.

They propose to consider two dimensions of subpolitics either 'active subpolitics' or 'passive subpolitics' in order to take into account the fact that phenomena like green consumerism, ethical investment or sustainability change might be regarded as non 'political', or at least non completely political as far as NGOs action would comparatively be considered.

For us, the same precaution should be put on the side of the incumbent actors of the formal political system, since some action – and sometimes vocational action- to be taken by individuals within policy networks in institutions of the bureaucratic order – and notably in expertise processes or technological assessment that are more and more open- contribute to the harnessing of the ecologicalization of public policies.

In light with these symmetrisation of active and passive subpolitics in both side of institutionalisation process, our thought about pesticide use reduction can benefit from the beckian work of Jensen and Blok (2008) that enrich Beck's 'cognitive-centred' perspective, while focusing on the importance of richly varied processes of lay knowledge-making in the daily practices of handling pesticide risks. This work echoes many of the recent work realized by French colleagues under the risk invisibilisation hypothesis. The sensory observations of pesticides, the experience of local fight against pesticide spays, the role of media experience about Monsanto and other documentary films, all these play for a re-appropriation of the senses of risks in daily practices, and not only in the cognitive framework of militants and radical defender of the zero-pesticide cause. But, here again, we shall imply a symmetrisation of the daily experience of pesticide risk for those who are disrupted in their occupation because of them as well as because of contentions: farmers and close to them extensionits. Of course the idea is not to here oppose a claim to another or to value the respective rationality of making sense with pesticide, but rather to insist on the fact that conventionalist farmers are - so to say- heavily challenged by the professional risk they encounter on one hand and by various direct or vicarious claims of consumerist, civic and environmental groups they have to face on the other. Even though this fact would be a resource for some normative claims about the rationality of using pesticide for the good sake of nourishing the creditworthy part of humanity, there is a need to overcome the critique of the lock-in framework in order to simply understand what is going on in this modernization process consisting in des-institutionalizing molecules, competencies that had been alignment through corporatist arrangements of the modernization of agriculture after war.

## **2. Getting rid of neocorporatist arrangements but still trying to co-operate**

## From Corporatism to Neocorporatism

*"The more it changes, the more it's the same thing." Jean-Baptiste Alphonse Karr, 1849.*

After the Second World War, a constant effort to modernize prevailed in the agricultural, rural and food domains of many western countries under the Marshall Plan. In France, after the decolonization period, which considerably changed the French economy's relation to food production, this effort was reshaped during the 1960s and supported by a sectorial corporatist compromise (Jobert et Muller 1987). This new compromise brought together elites of progressive movements or "professional organizations" of agricultural and rural development on the one hand, and some public servants belonging to modernist policy networks of the French state, on the other (Muller, 1984). Although such a corporatist compromise already existed before the war - and notably under the Vichy regime- it was sustained by different ideological underpinnings and economic contexts (crisis of 1929 and Keynesian state interventions, war economy of the Third Reich and affiliated states like France). The 1960 compromise expressed differently because of an ideology of progress for farmers: the farmer as a "professional" on the one hand and as the head of a rural family on the other. This ideology was based on humanistic values promoted by the JAC movement and on goals for farm units' profitability. The history of the creation of the 1960s neo-corporatist apparatus which built up the agricultural sector's practices and institutional pillars is already well-documented in French rural and political sociology (see, for instance, Tavernier et al., 1972; Muller, 1984; Coulomb et al., 1990; Muller 2000) and quite well known also in the international community (Keeler, 1987; Coleman and Chiasson, 2002). One can also mention the existence of similar account in the British case (Cox et al., 1986): thus, corporatist arrangements are a matter of exceptionalism but not of a French exception.

Despite some similarities in the social form of the junction between rural elites and public officers, the meaning and objectives of the modernist compromise show some differences with the Vichy compromise, even though it has to be symmetrically studied. The agricultural innovation system was then purposefully designed according to a linear vision of innovation from which stemmed an institutional division of labour between INRA (national public research institute), technical institutes (national R&D agencies specialized in products such as cereals, oil seeds, fruits and vegetables) and Chambers of Agriculture (extension policy and services at local level). Such a scheme rested on two main principles: i) the innovation policy (called a "development policy") was co-managed by the central administration and farmers' representatives; and ii) the funding of innovation was based on solidarity between territories and agro-chains through the redistribution of taxes and levies.

Institutional arrangements and political compromises as institutionalized by the 1960s laws of modernization established an alignment of actors within a “development apparatus”: farmers’ representatives (known as “les professionnels”), administration public servants, public researchers of agronomic institutions, and teachers of agronomic and agricultural higher education all focused on managing French agriculture like a big farm. The ideal type of “le professionnel” is the result of a labelling process within the representation system of farmers’ interests: a “professional” is a farmer who does not work much anymore on the farm except for running the business but who represents farmers in various organizations and institutions, see Maresca (1981) and Rémy (1987). This “Professionnel” has been the

Such alignments within the agricultural innovation system, aimed at achieving the complete modernization of agriculture, were not in contradiction with the concomitant Fordist industrialization of the food sector (Allaire and Boyer, 1993). Rationalization and innovation processes were then particularly active, whether they took place on farms, in food factories or in between. In fact, as long as the main issue was to increase the volume of agricultural production in relation to agro-chain efficiency and profitability, and to reach self-sufficiency at the European level, the linear organizational scheme of the R&D&E echoed the success of the alliance between corporatism and the agro-industrial Fordist regime, and was particularly well suited to the French position within the European Common Agricultural Policy (see Fouilleux, 1997). The systematic use of pesticide to ensure yield increase has been key during this rationalisation period.

### **Time for changes and reform**

As pointed out by Coleman and Chiasson (2002), the neo-corporatist compromise was opened up in the 1980s to a large number of “policy networks” under the agri-environmental turn. This period correspond to the start of neorural renovation and rural movement on one side and to the introduction of agri-environmental schemes in European and national policies, the onset of ecological modernization was starting on both side of the modernist regime: one from below and from the ecologization of public policy.

This regime became fragmented during the 1990s as agriculture faced a paradigm shift towards multi-functionality (Allaire, Hubert and Langlet, 1996) and productivism in agriculture became a source first of local or general concerns –because of various forms of environmental damage –and then of public concern –due to the BSE and GMO controversies (Barbier and Joly, 2001). The crisis that agriculture encountered, linked to the BSE saga and GM technology issues, deeply reshaped the “dispositifs” of the public control on food production (traceability) and farming techniques (bio-

watch). On both sides of the original compromise (the farm and the state), the heterogeneity of actors, the plurality of discourses, and the fluidity of policy-making profoundly reshaped the direction and the sense of the founding neo-corporatist compromise.

This clearly destabilized the agricultural innovation system and accelerated a reform of the French agricultural innovation system that had been an issue since the mid 80's. By fluidity we mean that new regulations emerged which were sometimes not very coherent with previous ones, and that the pace of their appearance was increasingly rapid. In 2003 the state abruptly changed the funding rules and cut off the co-management routines, which relied on the linkage between official trade unions and the Ministry of Agriculture. Our proximity to the social world of agricultural and rural development –as researchers on those issues –enables us to suggest that those in charge of innovation policy or, more locally, of development projects, did not at the same time re-conceptualize what was no longer working like an innovation system. In fact, although institutional and political compromises were discussed for years, the current re-arrangements tended to address funding pressure on the different links of the “innovation system” but did not propose a general scheme for R&D&E. The situation was therefore extremely puzzling for those in charge of running institutional life but, at the same time, full of localized or distributed collective experiments within the R&D&E organizations, for which extension engineers have played a central role to establish, and sustain the permanent effort of modernisation, which exists in agricultural, rural and food sector. Professions like farm advisors have emerged and been institutionalised precisely to rationalise practice of farmers, thanks to specific management settings mixing corporatist and bureaucratic values (Muller, 1984). It is to notice that, paradoxically, the environmental schemes that have implemented new regulations about ‘nature protection’ (see Mormont, 1996; Lascoumes, 1996) took the same general institutional arrangements and public funding procedure than that of the modernization process. In our case-study, skills to enhance pesticide reduction are matter of professional identity definitions and technological creation is a matter of professional political struggle. In our view the pesticide use reduction is the manifestation of a key battle at the heart of the sociotechnical regime, disrupting the possibility to simply and solely realise a soft technological transition at the level of cropping system definition. All the components of the neo-corporatist are affected: the bureaucrat, the “Professionnel”, the extensionist and the researchers.

So then what could be taken as a socio-historical contextualization of current change with this section, is much more the matter concern of what the present subpolitics of building futures are facing to redesign agricultural systems. The critique of neo-corporatism is not a context nor a pretext



but a political core text in the making. Let's see how it goes in practices with the empirical section to follow.

### **3. The ECOPHYTO plan for the reduction of pesticide uses**

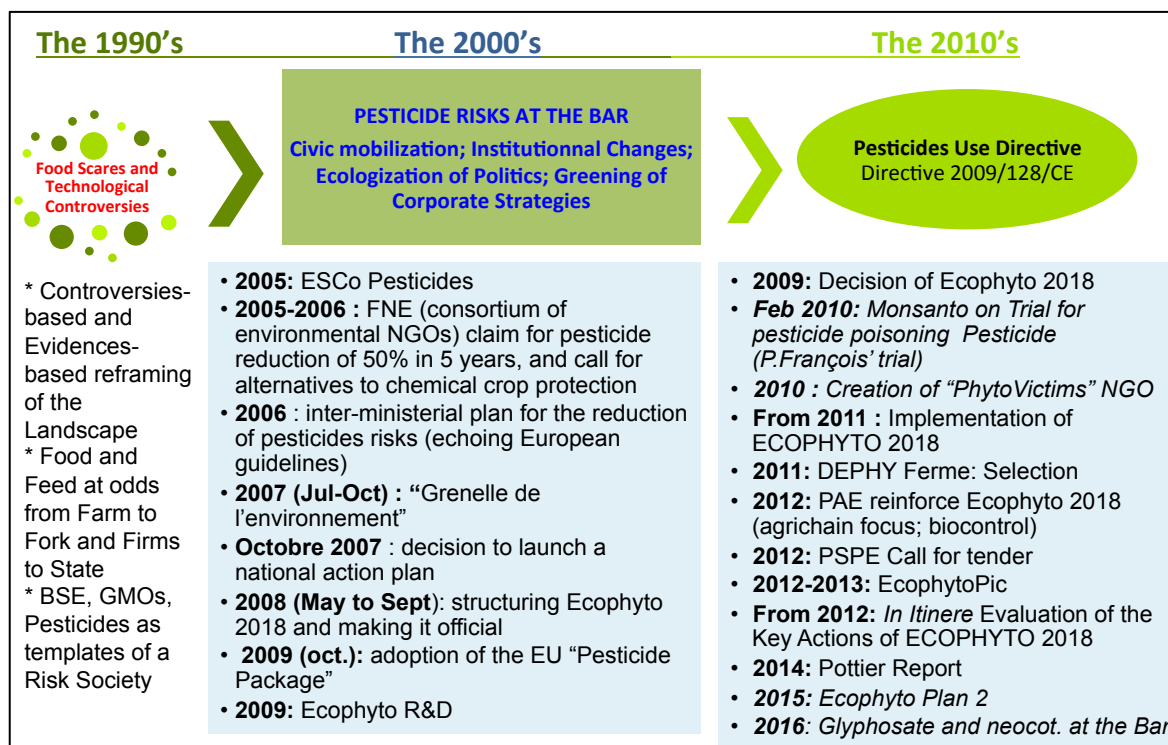
#### **The context of the institutionalization of the ECOPHYOT plan**

In this empirical part we shed light on the emergence and implementation of a public policy instrument designed to promote significant changes in crop protection practices through the reduction of pesticide uses. The instrument stems from a European regulation defining a general framework and obligations pertaining to a reduction of the use of phyto-sanitary products and to change crop protection strategies. Some comparative European studies have been realized through the ENDURE Network of Excellence (Lamine, Barbier et al., 2010; Barzman, 2011; Ricci et al., 2011). Of course one can notice much differences between the implementation of National Action Plans, basically related to the governance structure of agriculture, but also to the existence and the intensity of consumers' movement and NGOs mobilisation and alignments. During the 2000's and early 2010's, with some exception (Denmark and Sweden notably), national situations had shown a lack of repositioning the agricultural research and extension systems towards the objective of the European directive. It was not because of a lack of knowledge, sound sciences and defined extension activities - like the Integrated Pest Management or the Organic farming standard could be taken as master frames, see Lamine (2011)-, but much more because the production of knowledge and practices in relation to sustainable pesticide use were requesting the existence of innovative milieus and situation of exploration of alternative paths that would trigger radical changes at the heart of the dominant regime of crop protection, particularly for major industrialized field crops.

Year 2014 Source: FAOSTAT	Tons of Active Subst.			Surf. Arable land and Permanent crops (1K Ha)	Ratio Tons of AS per 1000 Ha		
	Fungicides & Bactericides	Herbicides	Insecticides		Fungicides & Bactericides	Herbicides	Insecticides
Belgium	3 096	2 577	556	839	3,69	3,07	0,66
Netherlands	4 869	3 266	297	1 081	4,50	3,02	0,27
Ireland	630	2 038	51	1 059	0,59	1,92	0,05
<b>France</b>	<b>34 480</b>	<b>30 965</b>	<b>3 484</b>	<b>19 328</b>	<b>1,78</b>	<b>1,60</b>	<b>0,18</b>
Germany	12 591	17 837	805	12 074	1,04	1,48	0,07
United Kingdom	6 234	8 082	638	6 278	0,99	1,29	0,10
Portugal	8 244	2 411	315	1 885	4,37	1,28	0,17
Poland	7 351	12 073	1 467	11 304	0,65	1,07	0,13
Slovenia	725	239	34	237	3,05	1,01	0,14
Croatia	981	889	153	891	1,10	1,00	0,17
Austria	1 645	1 376	267	1 417	1,16	0,97	0,19
Hungary	3 640	4 011	922	4 585	0,79	0,87	0,20
Spain	38 393	14 909	7 609	17 188	2,23	0,87	0,44
Italy	36 967	7 585	9 099	9 121	4,05	0,83	1,00
Czechia	1 403	2 321	284	3 219	0,44	0,72	0,09
Latvia	225	848	64	1 215	0,18	0,70	0,05
Slovakia	416	921	85	1 413	0,29	0,65	0,06
Estonia	86	426	28	654	0,13	0,65	0,04
Lithuania	605	1 394	44	2 384	0,25	0,58	0,02
Finland	199	1 305	13	2 234	0,09	0,58	0,01
Sweden	287	1 499	44	2 597	0,11	0,58	0,02
Greece	2 035	1 986	3 974	3 725	0,55	0,53	1,07
Denmark	387	1 205	19	2 436	0,16	0,49	0,01
Romania	2 293	3 795	635	9 203	0,25	0,41	0,07
Bulgaria	186	652	163	3 613	0,05	0,18	0,05

Table established through FAOSTAT data (<http://www.fao.org/faostat/en/#data/RL>)

The French case certainly represents an interesting situation for a sociological analysis of discontinuation in crop protection regime, since it entails three loosely articulated pathways of discontinuation when France had announced pesticides consumption by a rate of 50% for 2018: (1) the Grenelle of the Environment Party and the two Laws of the Grenelle to follow, (2) the structuration of a social movement against pesticide use accompanied by a movement for the support of phyto-victims; and (3) the late “plan national Ecophyto 2018” as one dispositive of a significant ecologisation of public agricultural policy under the “projet agro-écologique” launched in 2014 by the Ministry of Agriculture Stéphane Le Foll. As summarised in the Scheme 1 (see also Barbier et al., 2013), the implementation of the Pesticide use directive is embedded in a national action system for Pesticide reduction with its own legacy and national specificities and a profound effect of food scares and GMO controversies in the 1990’s, that represent political resources for a critique of productivism in agriculture and an obligation to publically engage ecologized agricultural policies (Deverre et de Sainte Marie, 2008) during the 2000’s. The adoption of the European “Pesticide Package” in 2009 has triggered a long process of designing and implementing a dedicated plan to reduce pesticide uses, which as correspond to a mobilization of agronomic research (Pesticide Expertise Report in 2005, Ecophyto R&D report en 2009) concomitantly to the “Grenelle de l’environnement” participatory national forum. During the 2010’s, the structuration of public action is intense while at the same time claims and political contentious if not trials against manufacturers spurred from the mobilization of NGOs.



### The installation of ECOPHYTO 2018

The plan Ecophyto 2018 is launched in 2011, with the expectation of hardly reducing pesticide use by a rate of 50%, “if possible”. It relays on a public action national dispositive, DEPHY, supporting the voluntary mobilization of groups of farmers and engineers of agricultural extension services from various organizations (but mainly Agricultural Chambers) towards the exploration of alternative crop-protection strategies, notably through the design of innovative cropping systems (called SCEP) that inherited from a current of agronomic research and extension promoting sustainable farming systems (Cerf et al., 2017).

This dispositive called DEPHY is a kind of network organization with distributed arenas of action and discussion spaces, which is fuelled by circulation of knowledge. A national pluralist core team has developed a database of all the local projects of farmers engaged in designing new cropping systems. This core team is related to local groups through two intermediary actors: Networks Engineers (NE) that are local facilitators and information gatherer, and more local Technical Engineers (TE) that gather information being directly attached to groups and managed by the NE. The DEPHY national core team not only absorb local knowledge but also addressed farmers through communication packages that consist of formatted leaflets describing cropping systems which could successfully reduced their use of pesticides while maintaining their level of income (format called SCEP). This SCEP format represents a cognitive artefact that has been designed by agronomist experts, extension services representatives and public officers of the Ministry. More than a communication tools it also

represents for individuals and groups of farmers a kind of informal contract to engage actors in a concrete way of transitioning towards pesticide use reduction. In this dispositif the role of intermediaries has been crucial though very heterogeneous from a place to another, but this is not specific to pesticide reduction and much more common to the design and implementation of agroecological transition (Steyeaert, Barbier et al., 2017; Cerf, et al., 2015).

A second type of knowledge is organizing the collective action of this DEPHY dispositif but more largely all the pesticide reduction policy: the measurement of pesticide use reduction through an agro-ecological indicators that evaluate farming system. This indicator (called *Indice de Fréquence de Traitement*) has been designed by agronomists, largely before the action plan had started (Bockstaller et al., 1997). But it has been rendered within the public action plan in order to enable a legitimated instrument of measuring the number of pesticide doses realized per year and hectares. The use of this indicator has spread in all extension practices in the last decade. The trajectory of this boundary object from the scientific stance to a administrative stance is much relevant to account for the structuration of a capacity to inform local efforts by farmer of local groups or more regional and at the same time to build a public account of efficiency of the national action plan ECOPHYTO.

Thus, two types of knowledge production catalysers (a cognitive artefacts and an indicator) have taken part to the building an infrastructure of knowing and acting toward the reduction of pesticide uses. Moreover they are also reversely used to inform scientific account of agro-ecological changes, but of course matters of disputes in their definition or scope of use. What is relevant for our perspective in this communication is how much the knowledge infrastructure is embedded in on-going scientific experiments, expertise parties, public administration affaires and local experiential knowledge about sustainable crop protection strategies. This knowledge infrastructure is also a more or less formalized network of farmers, practitioners, engineers, intermediaries and public officers in which the sub-politics of building futures with pesticides reduction is at play.

### **Main empirical results of ECOPHYTO 2018 implementation**

Based on the results of two collective research projects (the Pestimute-Gen project and MCAE-ObS project for the construction of a sociological observatory of agroecological transition that will be presented at next EARS conference in Krokowia), this communication proposes to reflect on evidences which show that the deinstitutionalization of pesticide use (in the sense of Maguire, and Hardy (2009)) is attached to the sub-politics of articulating a critique of a economical and technological lock-in with the delineation of various possible futures for agriculture.

**Result 1:** The plan ECOPHYTO resulted in a series of actions aimed at articulating the requirements of the European directive and the obligations of Member States with government action conceived of as the result of a societal power struggle. Hence, it was not seen by the agricultural actors as a sustainable promise with its own constraints: they did not learn from experiments which took place under the Nitrate directive aiming at reducing nitrogen use and did not valorise experiments undertaken under the umbrella of so called sustainable production systems.

- the plan was not based on a diagnosis seeking to achieve coherence on a country-wide scale between forms of agriculture that used little or no pesticides. Nor was it based on an integrated diagnosis of the various risks associated with pesticides (sanitary, professional, food and environmental).
- Our observations and field studies show that the quantified objective of a 50% reduction in ten years was the result of a decision process that translated into a global figure the state of a particular balance of power between ecologist organizations, farmers' unions, and the government, at the time of the Grenelle de l'Environnement.
- It thus emerges that the announcement of the ECOPHYTO plan linked to the precise political moment of the Grenelle stems from a fairly classical logic, on the institutional and political scene, of announcing general objectives.

**Result 2:** The ECOPHYTO plan has been repeated in the agricultural sector largely on the basis of prior collective expertise reflecting a technological orientation towards possible combinations of different more or less radical changes of practices for productive systems. Environmental risk is thus addressed essentially under the constraint of technical and economic risk.

- The documents and the debates that took place in the period when this goal had to be translated into a political framework of reference show that the actors of the agricultural world rapidly took up the framework and proposed a variety of versions. A previous experts' party called "ECOPHYTO R&D" had mobilized many different actors in the agricultural world in relation to the first inter-ministerial plan of reducing pesticide risks. It largely contributed to establishing the reference framework by focusing essentially on environmental risks.
- The focus has been put on an indicator of Pesticide Spraying (IFT), which can serve, on any kind of farm, to simply and operationally evaluate the reduction of the pressure exerted by pesticides on the environment, by relating it to the number of sprays.
- In parallel, other actors - mainly agricultural coops that distributed phytosanitary products and advised farmers- emphasized the technical and economic risks of limiting pesticides, in terms of lower yields and lower profits.
- Others highlighted the health hazards of workers, closely related to spraying equipment and to certification. They challenged the objectives while affirming their commitment to change, highlighting the margins for optimization of current use of pesticides and fertilizers via the development of decision aid tools, low-volume techniques, improvement of the functioning of spreaders, organisation of pesticides tanks recycling chain, and by proposing measures to protect farm workers.

**Result 3:** The local implementation of the various actions took place in a segmented way and reflects above all the adaptive and absorptive capacities of the prevailing neo-corporatist regime, rather than its ability to support the experiments and changes already under way locally. We can posit that the absence of systemic risk management associated with the use or not of pesticides adds to this weak entrainment effect of the ECOPHYTO plan in a process of transition. It is likely not to exceed a rather marginal improvement of technical and economic effectiveness and a respect for good practices in pesticide use.

- Ultimately, the plan presents as a fairly complex set of: (i) recycled ideas, in the sense of March (1991), (ii) opportunities aimed at protecting the public authorities from nascent controversies, and (iii) real innovations in experimental policy tools, yet which have hardly been considered for integration into the existing *dispositifs* of sustainable development, and have generated controversy on the general design of this mode of intervention. The implementation of the ECOPHYTO plan reflects some difficulty in applying the classical frameworks of risk assessment and management in the context of public policy applied to a sector as fragmented and diversified as agriculture. Although this difficulty is understandable, the plan does not provide for a systemic approach to addressing the various risks associated with the use - or non-use- of pesticides. Nor does it suggest technical changes and consequent changes in competencies that might be required.
- Rather than renewing conceptions of risk management for crops, our fieldwork showed that the challenge was above all to transfer the principles of plant surveillance to public-private or professional organisation, based on a logic of delegation of services by mandate. Hence, few changes were made in terms of objectives though the institutional framework clearly changed.

The public authorities did not initially provide for the specific Objective 9 concerning the health and protection of workers; it was added at the last minute at the request of representatives of the phytosanitary chemical industry (IUPP). This may seem paradoxical, but a strategic analysis of the system of actors shows that their request was closely linked to the then emergent controversies on occupational intoxication by pesticides and a highly charged context due to the legal proceedings instituted by a farmer against Monsanto, which he blamed for his occupational disease. More broadly speaking, Objective 9 did not directly address the way in which pesticide-related professional hazards were actually treated by the clinicians, the agriculture health insurance company and the administration of Public Health. Our research shows that the absence of epidemiological data to support a new approach to these risks was largely the result of a socially constructed ignorance (Jouzel and Dedieu, 2013). Finally, Objective 2 (consisting primarily of establishing a network of 2,000 farms, in 200 groups of farmers accompanied by an adviser) shows a form of innovative public policy and risk management tool. It can be seen as a space for learning and institutionalization of forms of agriculture to reduce the use of pesticides as they had already been experimented with, to a greater or lesser degree, in agriculture. The choice of using the IFT as an indicator of environmental pressure,

rather than precise indicators on environmental risk dealing with impacts on natural milieu or human health, can be seen as an adaptation by the sector to risk assessment and management concerning the use of pesticides.

**Result 4:** Despite the existence of actions intended to support processes of local experimentation in order to meet the goal of halving pesticide use by 2018, new coordination rules and new forms of intermediation are struggling to emerge. There is a need to challenge modes of construction of cognitive resources, along with the lack of attention paid to processes of accompanying learning by all the local actors, in order to articulate technical changes in territorial or supply-chain logics.

- very few new rules of coordination are made to articulate these experiments to “usual” development actions.
- crystallization of attention on the way in which the network can provide references on systems reducing the use of pesticides, thus leaving unanswered the question of how the dynamics of change on farms, and more broadly, whole territories, can be accompanied.
- The intermediation work and the coordination established partially reproduce the classical forms of relationship between the actors of research, R&D and advisory services, to the detriment of an approach centred on learning and the accompaniment of sustainable changes of practices
- absence of cognitive resources enabling the various actors of the territory to resituate changes in agricultural practices in the context of local issues, and thus to see public policy instruments as levers accompanying local dynamics.

### The aftermath of ECOPHYTO 2018

The ECOPHYTO plan received a public evaluation in late 2015 and was evaluated as an “apparent failure” through a national expertise (Rapport Pottier, 2015). Contentions have been raised against the prevailing lock-in of sociotechnical systems (Guichard, et al., 2017). Between critical contentions that have the flavour of scientific evaluation bottom-up exercise of public sectorial policy, and the lack of sociological account of field crop agriculture (Bernard de Raymond et Goulet, 2014), our results put into light the sub-politics of building futures with pesticides reduction. Shining light of those processes leads to overcome the mundane account upon a constitutive mundane divergence: scientific experiments and experiential knowledge about sustainable crop protection strategies request farmers, practitioners and intermediaries to take risks with sustainability transition, but this challenge is to be, at first, conceptualized, designed and advocated as a matter of short term economic issue, when public problems due to pesticide uses are conversely framed as human health and environmental health urgent matters.

This divergence certainly convokes a conflagration within the heart of the agro-industrial model (Jacquet et al. 2011), but it is also concomitant to an array of growing professional movement towards new approaches of agricultural production based on “classical” or “ancient” organic farming but also on almost new approaches of soil fertility at the heart of industrial cropping systems (Lamine, 2011; de Raymond and Tétart, 2012; Goulet F. et Vinck D., 2012). The agricultural governance system would then be as rotten as the Danish kingdom, but at the same time situated agencies would already perform alternative conditions of possibilities for many types of transition that articulate local constructive technological assessment of existing cropping systems within the incumbent agricultural sectors and the re-design of farming system involved in a redefinition of their attachments to soil fertility, environmental protection and value chains of food provision (not necessarily in short circuits).

This is such an “agency and structure” debate that spurs in the political agenda, and it deserves a close enquiry. One way to tackle with it was to frame a sociological account of the existing subpolitics of the ecological modernisation at stake within the institutionalisation of pesticide reduction in France.

## Conclusion

We have tried to establish how the U. Beck’s notion of subpolitics could to be mobilized and how it does consequentially articulate to considerations about the neo-corporatist organisation of the agricultural sector in France. According to us, it represents a necessary detour to account for the co-existence of disruptive critic, public transformative action and changes in an apparently lockin agrifood regime, which has lost its professional homogeneity and show a segmentation of positions according to professional ethos, styles of farming and technological renewal that are has much inheriting from various critiques of the productivist turn than renewed by environmental local of global challenges, and food provision remodelling (Hervieu and Purseigle, 2013). In this Weberian comprehensive sociological tradition the transformations of practices of rationalization in agriculture and rural development has to be harnessed again (Barbier et al., 2004).

Paradoxically it seems that the sanitary issue that had conveyed the objective of reducing pesticide within the political agenda could be rather a cause than a consequence of profound changes that are at play currently in agricultural development. This is rather congruent with result of colleagues that



have focused on the construction of ignorance of the prevalence of professional risks (Boudia and Jas, 2007; Jouzel et Dedieu, 2013). What becomes thus central for sociological investigation is the mechanism of existing regime destabilisation (Turnheim & Geels, 2013), and thus to understand the subpolitics of changes in individuals and groups engaged in self-organized experiential learning at a distance of the incumbent agricultural knowledge system. It calls for an understanding of the subpolitics of dis-engagement and detachment (Goulet and Vinck, 2012) as well as the understanding of institutional resistance to a change despite change has been promoted by policies and institutional supports.

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