

# **Implementation of Categories of Policy Mix as Indicator of Adaptation to Climate Change: Between Translation and Invisibilization of Climate Goals in French West Indies's Banana Chain<sup>1</sup>**

T14P10,T14P10 - Policy Integration for Boundary-Spanning Policy Problems: Climate Change Mitigation and Adaptation Policy

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This paper enlightens the issue of climate-oriented policy, scales and means of their implementation, as well as their limitations (Howlett, 2004; Adelle and Russel, 2013). Observing policy mixes between instruments and their reinterpretation during their “fluid” implementation (Flanagan, 2011), the paper shows that this process is dependent on four variables: multi-level governance and the complex process of translation of UE policy and rules (Giorgio & al. 2019), the specific polycentric governance style centered on powerful banana chain, the environmental agenda prioritized by local vulnerabilities, and the local arrangements build according to policy coalitions structures and relations.

Based on empirical case study in French West Indies (Guadeloupe), the paper analyses the climate policy integration and urges greater consideration of the issue on the existence of so-called “new” climate policies, thus fueling debate on the potential emergence of a new climate-oriented public policy sector. Our discussions also foster analysis of the idea of mainstreaming international climate change governance concepts in national (Biesbroeck et al., 2010) and local (Wilbanks, 2003) policies and sectoral regulation. For instance, in Guadeloupe, our case study on climate policy integration sheds light on the banana sector to “capture”, or at least retrieve (European and national) instruments dedicated to the adaptation to climate change (ACC) in order to support their own agricultural and environmental agenda and strategy regarding banana plant diseases, soil fertility and new regulation regarding phytosanitary products. At the same time, this occurs while the ACC objectives have been largely excluded from climate policy integration in Guadeloupe, despite climate change prospective and the awaiting vulnerabilities regarding especially drought and hurricanes.

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1 This paper is a first result of ARTIMIX research project (<https://www.artimix.fr/en>), funded by French National Research Agency (Agence National de la Recherche, ANR). The methodology is based on three main moment : first, an analysis of grey literature ad first wave of interviews concerning the ACC paradigme used in Guadeloupe (Smart Agriculture, agroecology, resilience...) and to understand the agenda setting of AACC ; second, a fine analysis of grey literature concerning policy ACC and AACC instruments implemented in Guadeloupe to describe and map them (see figure 1 and table n°1) ; third, a second wave of interviews based on a grid that permit to rebuild the implementation stories of AACC policy mixes (see tables n° 2, 3, 4, 5) and, by data processing, to develop a network analysis of actors who implement AACC policy mixes.

Then, we here demonstrate the ACC concept is hugely influenced by regional priorities that lead to the invisibility of climate change in the agenda setting. Indeed, adaptation to climate change does not appear as a priority in the local agenda but finds itself relegated behind other themes that monopolize the policy agenda, elected and state representatives attention (health, development, employment, land-use planning,) and it is once dealt with the other emergencies settled (sargassum pollution, running water facility,...). Even more, despite the ACC policies are not set in the local policy agenda, their dedicated European and national instruments are implemented. Nevertheless, as the State is supposed to play a critical leadership role in implementing EU policies and integrating climate change tools into bureaucratic and institutional structures to ensure timely and effective outcomes, decentralization process and sectoral regulation appear as counter elements in defining local policy-making process and new public management objectives.

However, instead of questioning a "strong" coordinated strategy we pay attention to the policy mix and usages of instruments. We there analyze the policy mix (Flanagan, 2018) as "complex arrangements of multiple goals and means which, in many cases, have been developed incrementally" (Kern, Howlet, 2009). This definition is interesting by using 'incrementalism' (Lindblom, 1959). It draws attention to actors interactions as they face policy change. Here, fieldwork brought our attention to the banana sector's usages of the EU tools and how its attempt to integrate their current practices and translate their own expectations into the EU policy local implementation designed for adaptation of agriculture to climate change (AACC) and the Agri-environmental and Climate Measures (AECM). The banana sector is collectively organized to defend its members in policy arenas and support its members to apply new regulation. Indeed, as European and national climate change policies are integrated and appropriated by sectoral processes, the bananas sector can rely on several kind of resources (economic, social...) that enable a translation (Callon, 1986) of such measures into sectoral and territorial actions. We especially demonstrate how banana sector makes use of different 'climatized' EU instruments to support their local agricultural path according to their own definition of sustainability and agri-environmental transition (AET): the Sustainable Banana Plan (SBP).

In the first part, the paper deals with the theoretical approaches that ground our analytical framework of policy change and tools' usages: "translation" of policy from UE to local context and "fluid" implementation of policy mixes. The second part develops the empirical facts that show this implementation process.

## **I. Policy change through the EU multilevel governance: from EU policy orientations to local sectoral regulation**

Regarding the adaptation of agriculture to climate change (AACC), the outermost region Guadeloupe in the French west Indies is embedded in multilevel policies from the EU level and the Common Agricultural Policy with the Agri-Environmental and Climate Measures (AECM), the French National Plan for Adaptation to Climate Change and the decentralisation process that gave new prerogative to the Region government. These policies and tools transferred and designed at different levels reflect two main questions about the policy change in a perspective of AACC:

- 1/ How adaptation is integrated in the current multilevel agricultural-related policies?
- 2/ What are the local and sectoral effects on (the mix of) AACC policies?

To answer to these questions, we first have to describe the current policy situation and lay in the dedicated literature to integration transfer, change and mix.

### **I.1. The EU policy transfer and AACC integration issue: from concept to policy**

According to policy transfer studies and Europeanisation process (Dolowitz and Marsh, 2000; Radaelli, 2003; Delpeuch, 2009; Dunlop and Radaelli, 2018), these locally-designed implementations allow distinguish among fit and misfit. It describe situations in which Europeanisation appear as a convergence or divergence between European orientations and local policy implementation (Cowles, Caporaso and Risse, 2001). Indeed, table 1 seems to illustrate that EU policy implementation follows policy transfers in which EU orientations are progressively translated into a sectoral and territorial definition of rural development. Here policy transfer seems to make AACC policy formulated expectations reoriented in favor of a locally designed agri-environmental transition (AET).

Regarding the integration issue, literature described AACC as a transversal issue (Urwin and Jordan, 2008; Gillet, 2009; Dahan, 2014; Aykut, 2014; Rasul and Sharma, 2015) that necessitates transectoral and coordinated policies (Di Gregorio, 2017). That means: 1/ an internal coherence with mitigation objectives and tools; 2/ an external coherence within sectoral policies (energy, planning, rural, health, etc. policies); 3/ a vertical integration within scales of governance and political regulation and finally 4/ a horizontal policy coordination.

In Guadeloupe, the reference to AACC is very fluctuating in the legal framework and policies. From the EU one, the Common Agricultural Policy (CAP) and its the second pillar provide Agri-Environmental and Climate Measures (AECM) to reach rural development, biodiversity and CC adaptation and mitigation goals. These orientations are transferred through the Rural Development Program (RDP) that is a planning document for agriculture and rural development defined by the Region. Moreover, at the national level, the National Plan for adaptation to Climate Change (NPACC). This one has been implemented at local level, as it is in Guadeloupe, as the Energy, Air and Climate Regional Scheme (EACRS) and Energy, Air and Climate Territorialized Plan (EACTP). That also grounds the Law on agriculture, food and forest adopted in 2014 that made lay agriculture in the adaptation issue. Finally, AACC can only fits in other local planning document as the Regional Development Scheme (SAR), the local urban planning one (PLU), water (SDAGE), economy (SCOT), *etc.* In 2011, the InterMinisterial Council for OutMost Region created the RITA networks to support agricultural innovations and transfers. Finally, the EcoPhyto Plan is phytonasaniary product trade and use restrictions.

The paper aim is not to evaluate such integration across agricultural issues and policies according to Di Gregorio framework (especially the criteria 1 and 2) but we can point out that AACC orientations and policies are transversal except the EcoPhyto Plan that follow sanitary and mitigation concepts. Moreover, coordination is under the competence of the State services (DAAF, DEAL, *etc.*) and Region government (Water Office, *etc.*). Finally, they are all declined in local measures. Sectoral ones are defined case by case which questions the vertical integration and the policy coordination.

**Table 1 AACC Policy and tools: level, orientation and implementation**

Policy	Top-down orientations	Local implementation	AACC label	Hard/soft law	Variables	Competent actor	Targets
European common policy CAP	CAP (2014-2020)-2ond Pilar-	CAEM	Yes	Soft: cofinancing under conditionality	AACC	Region	Farmers
Rural development	RDP Guadeloupe (2014-2020)	CAEM	Yes	Soft: cofinancing Region-Farmers-UE Conditionality	AACC Agri-Environmental Transition	DAAF Ministry of Agriculture Department at regional level	Farmers
French ACC	National Plan for ACC (2018-2020)	Local & territorial EACRS/E ACTP	Yes	Soft	AACC and Mitigation of CC	ADEME French Env. & Energy Management Agency	Local and sectoral actors
Water policy	EU Water Directive, 2001 )	SDAGE (regional Water Dev. & Management Plan)	Yes	Soft/policy orientations	Drought Water quality	Regional Water Office	Local Government and public administration
French agricultural policy	Law on agriculture, food and forest (2014)	GIEE (Economic and Environmental Interest Group)	Yes	Soft: financial incentives	Agri-Environmental Transition AACC	State	Farmer groups
National policy for French OutMost Regions	InterMinisterial Council for OutMost Region (2011)	RITA (Agricultural Network for Innovation and Transfers)	No	Financial incentives	Plant varieties and animal diversification	Public-private network	Region Farmers
French Law on authorized phytosanitary products	EcoPhyto Plan (2008)	Formation Teaching certificate: Certiphyto	No	Hard law Financial incentives Course/information	Agri-Environmental Transition Public health CC Mitigation	State (DAAF) Trade restrictions	Farmers Agricultural cooperatives
Sustainable Banana Plan (SBP) (2008)	Sectoral Chart of conduct and guidance for good practices		No	Self regulation	Agri-Environmental Transition	Sector collective organisation IT2-LBG	Farmers

Regarding this AACC institutionalization, this table has to be understood in view of the decentralization process. Moreover, tools are mainly implemented through soft law and incentives and the conditionality on agricultural practices and funding are locally designed through the review of the Regional and the States departments. This follows the changing nature of the State which is less and less prescriptive but participative according to a reconfiguring state by a government

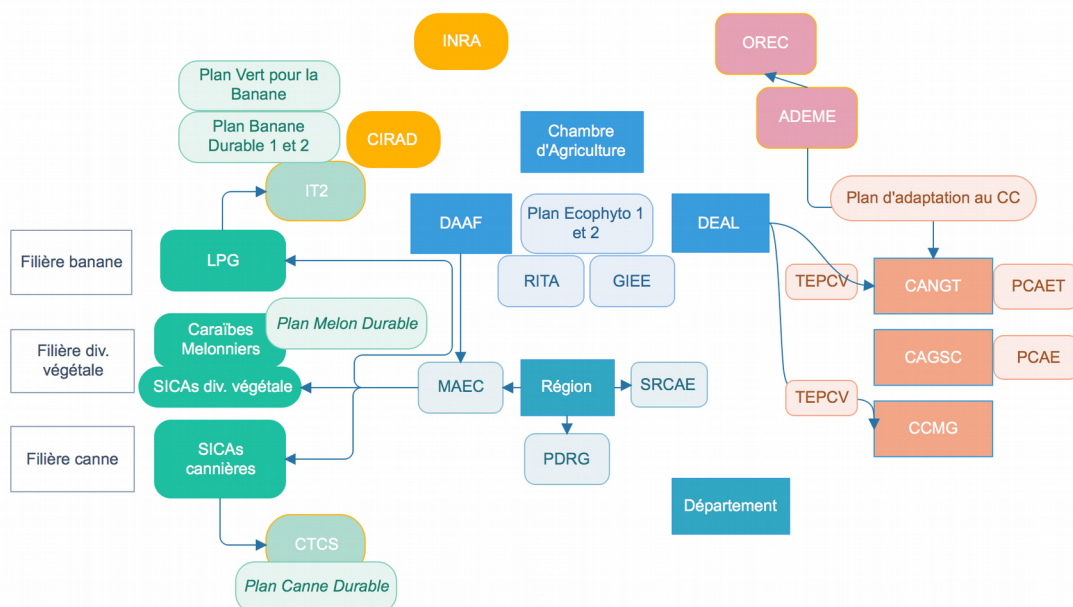
from distance and a new public management paradigm (Bezes and Padis, 2008; Bezes and Pierru, 2012; Bezes and Lidec, 2016), especially in outmost Regions (Beauvallet et al, 2016). In turn, our attention focuses on the AACC policy and its polycentric governance : fragmentation of institutions within levels, of public, private, local and sectoral actors.

## I.2 Changing policies and actor tools usages to frame AACC into an Agri-environmental transition: from a climatized policy top-down transfer to the AACC invisibilisation in locally designed policy tools

The literature dedicated to EU multilevel governance (Douillet, 2003, Queva, 2014; Pasquier, 2015) and the Rural Development pillar implementation (Berriet Sollicec et al., 2009; Landel et Le Roy, 2012; Lataste et al., 2012) demonstrated how EU orientations and CAP second pillar tools are locally adapted to specific and territorialized issues and demands toward questioning the efficiency of such EU orientations on local policies. Indeed, actors are there situated in sectoral regulation in regards to a local agenda-setting and policy-making process (Tabeaud, 2009 and 2010; Marquet and Salles, 2014; Montouroy and Sergent, 2014). That makes some authors defend a political usage of territory approach (Carter and Smith, 2008; Carter, 2018) to understand ways of Europeanization process and the variety of EU transfers and finally question the territorial usages of Europe.

The Figure 1 (see below) illustrates such local governance of the EU CAP second pillar and French AACC policies, in the specific case of horizontal Guadeloupean governance of agriculture. Local Government, state departments and sectoral actors interact and this has to be understood as polycentric. Through the process of decentralization of responsibilities, the Guadeloupean Region Government defined local guidance documents as the State interministerial services of agriculture (DAAF) and land-uses planning (DEAL) : verify and monitor its legality as well as they authorize EU payments to farmers. Furthermore, sectoral actors define their own chart of conducts, as the Sustainable Banana Plan (SBP) for example. The Figure 1 especially points out that they are closely intertwined in the policy and administrative processes. Hence, it questions on how regional politics encounter sectoral regulation and state interministerial services law monitoring. How do regional actors refine meaning and institutional arrangements on EU and French policies implementation?

**Figure 1 Cartography of actor and tool interactions in Guadeloupe**



Grounded on this cartography, two sets of questions arise:

First, behind the top-down approach, a supposed State central role and administrative interactions setting, whom and how do actors mobilize and network to embody their interests? A bottom-up questioning on actors involvement and strategies regarding these top-down orientations and transfers seems inescapable. There literature on networks (Le Galès and Thatcher, 1995) and coalitions (Sabatier, 1998) allow insert such a policy transfer from EU into collective action and actors' coordination. Networks and coalitions refer to various forms of more or less consistent cooperation that public and private actors make arise regarding the agenda-setting, decision and implementation. Different networks and coalitions could interact and confront as they defend different problem definitions. Here, these networks and coalitions emerge in regards to a local context and issue. As described in the introduction, our case study focused on the banana sector is intricately linked with local issues, politics and policy. Thus, these networks appear territorialized as their arguments and interests are territorially-linked and this influenced their demands regarding EU tools implementation (Smith and Carter, 2008; Carter, 2018). In other words, with the objective to be heard and legitimized, actors and networks have to translate their formulated interest and expectations regarding EU tools usages with local general interests and societal demands.

Second, such expectations and networks question EU orientations local actors' interpretations. According to Callon (1986), translation refers to the redefinition attempt of policy orientation, norms, institutions, tools regarding the expected links between policy orientations and policy targets. Such a translation implies three kind of action (Hassenteufel and Maillard, 2013; Hassenteufel et al., 2017): 1/ the discursive dimension: reformulate the policy agenda-setting problem and/or the concept in order to make acceptable this actor's definition and approach of the agenda-setting regarding the on-going controversies and the alternative demands; 2/the actor's dimension: the actors' learning, mobilizations and networks at different levels to influence the policy change; 3/ the institutional dimension: the institutional framework in which national public policies and actors are embedded.

Such translation lays in three dimensions: first, the policy agenda mixes AACC orientations with others agenda-setting priorities ; second, the private sector is asked to adapt such new orientations into its current practices but these were defined regarding international competition, local climate conditions and societal demands. Third, State services pay attention to the institutional framework and policy orientations with attention to the coordination instruments. It thus questions how instruments are interpreted and are translated the climate turn of Guadeloupean agriculture and how actors are using them.

### **I.3. The “fluid” implementation of policy instruments and of their mixes at local level**

Policy instruments are “concret tools” to achieve objectives (Rogge, Reichardt, 2016). But they are not only instrumentalist tools based on technical modalities and optimization calculation or selection of optimal ones. They are not neutral devises. Indeed, whatever the category of instrument considered (stick, carrot, nodality/information/substantive or soft ; Bemelmans & al., 2011 ; Howlett,

2009 ; Rogge & Reichardt, 2016), it is subject to “interpretative flexibility” (different meanings, advocacies), to interpretation and reinterpretation during their implementation :

- first, interpretation and reinterpretation according to agenda setting and time as we have seen : « Past decisions constrain the range of options available for decision makers (Flanagan, 2011, p. 708) and instruments depend of the agenda setting (Flanagan, 2011, p. 704).
- second, according to context and territory (kind of vulnerabilities...), to the sector of production targeted, to politics, and finally, according to governance styles. More polycentric governance is, more implementation of policy tools is “fluid” (Flanagan & al., 2011). Furthermore, targets are not passive, they participate to this complex implementation game (no use, different interpretation interpretation than policy makers...).

Our research focuses on “fluid implementation” (Flanagan & al. 2011) and “implementation model” : “how instruments are publicized”, “how and to whom they are allocated”, “what supporting guidance is putting in place to help firms [actors, targets] find knowledge providers”, the context in which they are implemented (bounded rationality of actors, information asymmetry, politics, values, models of action/local or sector governance style.

According to this approach, hypothesis are the following ones : first, implementation of policy instruments is very specific case by case basis because implementation is “arrangements between authorities and other actors for putting policy instruments into actions” (Rogge, Reichardt, 2016), and second, this approach of policy instruments and their implementation adds to their instability in terms of rationales, goals, uses.

As already highlighted in the introduction, policy mix implementation is an ideal belvedere to observe coordination in climate adaptation policy. Indeed, policy mix (often defined by science and technic literature<sup>2</sup>) “are complex arrangements of multiple goals and means which, in many cases, have developed incrementally over many years” (Kern, Howlett, 2009). Furthermore, during implementation stage, we have to add to this very adapted definition that they could be incremental arrangements of multiple actors and sectors too. The study of policy mixes allows thus” an understanding of the ways in which individual instruments are combined into effective policy mixes within national [innovation] systems” (Soete, Corpakis, 2003).

Literature defined various categories of interaction and trade off between policy instruments. First one is conditionality or request : one instrument might be implemented if and only if criteria defined by an other instrument are respected. For example, in our case study, Incentive subsidies for changing agrarian practices (AECM) are conditioned by technical agrarian advices and diagnosis (measure 2 of the RDP, see part II). In this case, policy makers designed this prerequisite and it is respected during the implementation. Second one is complementarity which means that technically or in their goals, instruments could or might be implemented together. For example, sustainable management of a product (AECM) might be connected to incentives for investments for farmers (measure 4 of the RDP, see part II). But in the case of our case study, this mix is not implemented. Synergy means that actors, during their implementation, actors invent articulation of instruments to purchase local goals. For example, measure to decrease use of phytosanitary products in the second Sustainable Banana Plan is mixed, in an unpredictable way, with the integrated management of rodents (measure 10.1 AECM). In this way, this article, based on a “fluid” definition of mixes, goes

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2 For example : “A **policy mix** is defined as: The combination of **policy** instruments, which interact to influence the quantity and quality of R&D investments in public and private sectors” (Ring & Schröter-Schlaack, 2011). Specifically about policy mix (research, and transition toward sustainable policy, see also Rogge & Reichardt, 2016).

beyond classical findings about policy mixes, underlying two points : the design of the mix could change from a “paper” (by policy makers) and ex ante definition of the mix, toward an “invented” and “reinterpreted” one (implementation synergy) (Kirchner, Schmidt, Werhle, 2019); and each category must distinguish three subcategories of mix : mix of means, mix of objectives, and mix of both of them (see table 2). Indeed, a closer look reveals that as well policy makers as processors purchase those three kind of goals. Once again, this case study allows detailing more precisely the categories already highlighted by the literature. Indeed, the table n°2 segregates 10 theoretical categories of policy mixes (table 2).

**Table 2: categories of mixes**

Ex ante: mix designed by policy makers ("paper mix")	Mix negotiated and/or invented during implementation ("implemented mix")	Kind of mix	
1-No mix	1-No mix	1- No mix during implementation	Type 0 (no link)
	2-Implementation synergy: actors invent/innovate new mix during implementation (new arrangement between and/or with bureaucracies)	2-Implementation synergy for new mix	2.1- mix of means 2.2- mix of objectives 2.3- mix of both of them
3-Programmatic mix: policy makers explicitly organized a mix between specific instruments to reach a specific goal or a respect a "philosophy" of a program	3-Implemented	3- Programmatic mix implemented	3.1- mix of means 3.2- mix of objectives 3.3- mix of both of them
	4-Articulation deficit: partially implemented	4- Programmatic mix partially implemented	4.1- mix of means 4.2- mix of objectives 4.3- mix of both of them
	5-Mix non operationalized	5-Programmatic mix non-operationalized	5.1- mix of means 5.2- mix of objectives 5.3- mix of both of them
6-Technical conditionality: policy makers explicitly designed a prerequisite or technical complementarity between specific instruments	6-Operationalized	6 -Mix with technical conditionality operationalized	6.1- mix of means 6.2- mix of objectives 6.3- mix of both of them
	7-Articulation deficit: partially implemented	7- Mix with technical conditionality partially implemented	7.1- mix of means 7.2- mix of objectives 7.3- mix of both of them
	8-Conditionality non operationalized	8-Mix with technical conditionality non-operationalized	8.1- mix of means 8.2- mix of objectives 8.3- mix of both of them



9- <u>Incompatibility:</u> policy makers explicitly disconnected instruments	9- Incompatibility respected	9- Instruments incompatibility (no mix)	9.1- incompatibility of means 9.2- incompatibility of objectives 9.3- incompatibility of both of them
	10-Actors reconnected instruments during implementation	10-Reconnection mix	10.1- mix of means 10.2- mix of objectives 10.3- mix of both of them

Source: authors

In the framework of this theoretical table of all kinds of links between policy tools, the third part of the article will describe the categories of mixes implemented or not in the case of this case study (see part II, tables n°4 and 5).

But beyond this classification of mixes, this article aims to study variables that explain those mixes and their “fluid implementation” in the case of climate change policy instrument used by banana chain in French West Indies, and specifically those that explain the modality of mixes of instruments during their implementation. To do so, this paper draws on four explanatory variables. The first one is the multi-level governance (Di Giorgio & al., 2019) of these instruments that shows a “fluid” implementation from UE design of AECM to national, regional and, *a fortiori*, to the ultra-marine specificities (bureaucratic implementation of AECM with arrangements and mixes with national and regional planning ; governance of the strong banana chain in the economy of the island, more specifically the might of its agricultural technicians who negotiate with public authorities on behalf the local farmers. The second variable is a polycentric but specific governance style which is structured by the banana chain and its technical and administrative capacity to build arrangements with national and regional bureaucracies on the island (fragmentation/technical system (not really innovative) (Flanagan & al., 2011). The third variable is the set of local vulnerabilities in the sense that they move the agenda setting toward specific advocacies and explain the relevant actors in the implementation game. And thus, the fourth variable is the structure of the policy network (and its clusters or coalitions) that explains the arrangements on the ground between actors and finally the way they use, reinterpret, or not, policy instruments.

## **II. AACC policy mix in the case of banana chain in French West Indies: ‘invisibilization’ and translation**

The case study highlights the process of ‘invisibilization’ of the AACC advocacy: the translation during the agenda setting is explained by local vulnerabilities, the multi-level and the specific governance in which chain representatives have an important role to play. Then, the implementation process illustrates another moment of the translation process, during which the vertical integration between actors of AACC governance and the “interpretative flexibility” of the policy mix lead to the following situation: the space let by the actors of AACC governance implementing instruments of the policy mix is invested by chain’s organizations. These two results outline the importance of chain structure of the banana sector. Thus, the case of banana-fruit chain enables a better understanding of AACC translation during the agenda setting through the SBP use of AACC instruments, and the implementation one through the relays the LPG, the professional organization

for the banana chain, operates in front of the lack of operationalization of the policy mix by the official actors of governance. This second part empirically demonstrate that multilevel governance, polycentric management system, and structure of the policy network are the most important explicative variables of this implementation.

## **II.1. The ‘invisibilization’ of ACC in local agrarian policy: from European agenda setting to local one**

Studying the AACC public policies first requires to list and to describe several existing climate change adaptation policies and their instruments, thanks to a first set of interviews and study of grey literature. This first step enables to illustrate how public policies changes through the agenda setting, and dropout the climate change adaptation paradigm.

At the end of the decade 2000, three international concepts have been identified as new frameworks for AACC, regarding the academic publications and international organizations events. Considering the recent but significant inflation of *agro-ecology*, *climate-smart agriculture* and *nature-based solutions*, one of the entry point for studying ACC in Guadeloupe was to identify the use of those concepts into local agrarian policies. Different types of instruments have been documented according to three types of ACC paradigm integration.

Firstly, there are policies innovations on ACC, that is to say new type of instruments, especially dedicated to climate issues. They rely on a very soft French national law, and put the inter-municipality as the first actor of those policies: they are for instance, the EACRS and EACTP, both included into the National Plan for Adaptation to Climate Change (PNACC), a national ACC labeled plan. They are instruments and actors of the ACC coalition existing in Guadeloupe.

Secondly, there are “climatized” instruments, which are instruments that were already existing and which are *a posteriori* labeled as climate instruments (goals and paradigm): they are for instance the AECM (C for Climate), since the 2014-2020 CAP programing period, whereas they were only Agri-Environmental Measures (AEM) for the last programing period. They are incentive measures as they offer subsidies to farmers if they adopt, for 5 years, a defined environmental-friendly or climate change mitigation or adaptation practices.

Finally, the ACC instruments in Guadeloupe are found at a local and chain level. They integrate the *agro-ecology* concept, in their official writing description or discursive presentation: they are good practices charters elaborated by organisms leading chain sectors, or interest groups, such as the SBP. They enables ACC from an even more bottom-up process than the AECM, but this set of instruments is more nebulous as it integrates several legal sources and offers a large panel of definitions of *agro-ecology*, that rarely considers climate change adaptation as a goal.

Mapping the ACC instruments enables to analyze policy changes undergoes across sectors, actors, times, levels, and/or goals. Thus, it enables explaining the ‘invisibilization’ of the AACC paradigm from the “climatized” instruments.

The first type of ACC instruments, for instance, the new ACC policies, illustrates the lack of agrarian sector inclusion into this climate change turning point taken by the French policies. The EACTP and EARCS orientations concerned very little the agrarian sector as they are instruments led by inter-municipalities and the ADEME, a governmental agency, which deals with urban development, energetic efficiency, air quality and waste management. Nevertheless, those types of

instruments define the shapes, strategies and actors of an existing ACC coalition in Guadeloupe : they do not really integrate agriculture as a prior sector to adaptation to climate change, but they do integrate farmers through training session on ACC.

The second type of instruments, the “climatized” ones, highlights how an instrument can change through times, levels and goals. Indeed, AECM are supposed to tackle climate and environmental issues. Nevertheless, at the national level yet, the goals of the AECM meet a national *agro-ecology* strategy that articulates only environmental and economic performances, and tries to articulate a bottom-up and top-down strategy to write the content of the AECM. At the regional level, in Guadeloupe, these AECM orientations can be illustrated by the content of the measures and their agenda setting. They are designed in order to dropout phytosanitary products. On one hand, this means that each organized chains in Guadeloupe has its own set of AECM, because of the integration of chain representatives to carry their own needs, during the agenda setting process, what is allowed by the local management authority. On the other hand, for each chain, the measures concerned the reduction or dropout of phytosanitary products: this orientation is mostly justified by a health protection register first, then an economic argumentation, and finally an environmental discourse. C disappeared during AECM agenda setting.

Finally, for the third type of instruments, it is the same kind of framework that *agro-ecology* goals carried out : *agro-ecology* is often assimilated to the dropout of phytosanitary products, without considering the potentialities with regard of AACC.

Explaining the ‘invisibilization’ of the AACC framework across policies levels consists in highlighting a specific governance style where the changing nature of the State, less and less prescriptive, gives the opportunities to the strong chains in Guadeloupe to invest the agenda setting process of the AACC European instruments: the evolution of AECM is a very interesting example to illustrate the misfits/fits and the translation process operated. The goals of the instruments are permeable to local vulnerabilities, that are basically shared among the chains : in Guadeloupe, the agrarian sector (as in Europe in general) has to face the dropout of phytosanitary products imposed by European and French legislation, in a context of tropical climate where the parasitic pressure is even more important than in temperate areas.

As the European Union recommends in the new CAP and the French agrarian strategy too, the efficiency of the AECM has to be reached through the implementation of combined measures. Despite the lack of AACC goals of the AECM in Guadeloupe, the analysis of the implementation of those combined measures offers a new perspective to the study of the ACC policies, through the implementation of a policy mix.

## **II. 2. Implementation limitations of a AACC policy mix**

Some of the ACC instruments existing in Guadeloupe are supposed to be implemented together. Nevertheless, the implementation of the policy mix undergoes some difficulties. That highlight limitations of AACC policies governance.

The ACC policy mix studied in this research is composed by three European instruments. They are measure of technical agrarian devices (measure 2 – M.2.1), physical investments (measure 4 – M4.1) and the AECM (measure 10). On one hand, during the instruction of an AECM request or a

physical investments one, the instruction authority<sup>3</sup> checks if an Agri-Environnemental and Climate Diagnosis (AECD) has been realized for the AECM subsidies, or a Global Plan of Farm (GPF) for the investment requests. The AECD is conceived as a way to inform farmers on AACC issues, among others, and can be funded through the M2.1. Thus, the M2.1 appears as well a technical as a mandatory conditionality to implement the AECM and investments requests. On the other hand, the RDP suggests that some investments (agrarian tools or materials, infrastructure facilities), useful for complying with the AECM practices, can be funded through the M4.1. Moreover, these investments can be funded to a better rate, if the farmer has contracted a AECM. Thus, the M4.1 appears as a financial and programmatic subsidy for the AECM. At this stage, we can identify several types of mixes between instruments: financial or goal-based ones and programmatic or conditional ones. Nevertheless, in order to complete these types, it is essential to consider the implementation of them.

Source	Measures	Instruments (abbreviation)	Relations with other instruments	Type of mix (in reference to table n°1)	Actors of implementation
Rural Development Plan (RDP)	Measure 2 : technical agrarian devices	Subsidies for Diagnosis (M2.1)	M2.1 finance the Agri-environmental and Climate (AECD) which is mandatory for requesting an Agri-environmental and Climate Measure (AECM)  M2.1 finance Farm Global Plans, which are mandatory for requesting an M4.1	7-Mix with technical conditionality partially implemented  6- Mix with technical conditionality operationalized	Strategy : Regional Council Instruction : DAAF (STARF) Instruction softwares : Regional Council and ASP Controls : DAAF and ASP Beneficiaries : technical certified organisms
Rural Development Plan (RDP)	Measure 4 : physical investments	Subsidies for modernization of the farm (M4.1)	M4.1 finance some investments (such as plants), useful for the implementation of Agri-environmental and Climate Measure (AECM) M4.1 are subsidized to a better rate if the farmer has subscribed to a Agri-environmental and Climate Measure (AECM)  M4.1 must be requested with a Farm Global Plans, which can be funded by M2.1	5- Programmatic mix non operationalized  6- Mix with technical conditionality operationalized	Strategy : Regional Council Instruction : DAAF (SEA) Instruction softwares : Regional Council and ASP Controls : DAAF and ASP Beneficiaries : farmers
Rural Development Plan (RDP)	Measure 10 : Agri-Environmental and Climate	Subsidies for promoting new practices in the farm (AECM)	M10.1 can benefits from M4.1 subsidies for some material	5- Programmatic mix non operationalized	Strategy : Regional Council Instruction : DAAF (STARF) Instruction

3 The European Union elaborates the Common Agrarian Policy (CAP) framework which can be adapted to some extent to regional particularities. For instance, the EU defines a network of actors and the competencies of each of them: the strategy authority is in charge for planning the whole CAP orientations into the country; the instruction authority is in charge of controlling the validity of the dossier request; the payment authority proceeds to the payment... Each of these actors are then established according to the institutions existing and their competencies.

	Measures		M10.1 must be requested with an Agri-Environmental and Climate Diagnosis(AECD), which can be funded by M2.1	7-Mix with technical conditionality partially implemented	softwares : Regional Council and ASP Controls : DAAF and ASP Beneficiaries : farmers
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**Table 3. Description of instruments integrated into the policy mix studied**  
Source: authors

The regional application of the CAP programing suffers from several implementation difficulties.

*A. Programmatic mix non operationalized (type 5): mix between AECM and M4.1*

Firstly, while M4.1 and AECM are supposed to be subsidized at the same time in order to reach a financial link, their instructions are compromised by the instruction tools provided by the payment organism, the Services and Payment Agency (ASP) and by the fragmentation of the institutions in charge of the instruction, the regional DAAF. Indeed, the two measures are instructed through different tools and by two different agencies, that barely communicate with each other. The AECM are instructed through a software updated by the ASP and by a service of the DAAF, the STARF. The investments subsidies are instructed by an another software, also updated by the ASP, but by an another department service of the DAAF, the SEA. Nevertheless, the upgrade of the software relies on ASP financial priorities, that is constrained by European standards, especially since they are evaluated: important measures, with regard of the financial amounts, are prioritized, that is to say that the software dedicated to investments is updated much more quickly than the one dedicated to the AECM. At this day, some investments requests have been paid, but no ones for the AECM since 2016. This is one of the difficulties between the two measures.

Moreover, during the instruction, interviews revealed that there is not systematic controls between the M4.1 and the AECM, because of a lack of communication between the two different softwares, and because of the fact that departments are not the same. This means that even if a farmer has engaged an AECM, he will not benefit from a better rate for his investments. In short, the financial links between the two measures are not operationalized (type of mix 5-Programmatic mix non operationalized).

*B. Mix with technical conditionality partially operationnalized and operationnalized (type 6 and 7): mix between AECM and M2.1*

Secondly, between the M2.1 and the AECM, it is necessary to highlight the way the first one serves the second one to understand why the goal connection of the policy mix also failed. Indeed, instead of being an informational tool for raising awareness on climate and environmental issues for farmers and a technical tool for accessing to funds, the AECD only serves financial needs. The management authority of the M2.1, which is the Regional authority, is supposed to edit a framework for the AECD. The current framework is a very flexible one, that does not detail climatic and environmental criteria: each structure that can realize diagnosis is free to edit its own one. This is justified by a will to not be too mandatory according to an interviewee<sup>4</sup>, in charge of the writing of the RDP, because it could have made harder the request process. That is why the links between those measures are implemented partially (type of mix 7-Mix with technical conditionality partially

<sup>4</sup> Semi-structured interview, conducted on the 14th, March, 2019

implemented). The GPF does not suffer from this problem, because it is set in a business management vision. Therefore, it is an implemented mix (type of mix 6-Mix with technical conditionality operationalized).

Politique		M2.1 PDR	M4.1 PDR	M10 PDR	SBP
	<b>Instrument</b>	Technical agrarian devices	Physical investments	AECM	SBP
M2.1 PDR	Technical agrarian devices	X	6- Mix with technical conditionality operationalized	7- Mix with technical conditionality partially implemented	1- No mix before and during implementation
M4 PDR	Physical investments	6- Mix with technical conditionality operationalized	X	5- Programmatic mix non-operationalized	1- No mix before and during implementation
M10 PDR	AECM	7- Mix with technical conditionality partially implemented	5- Programmatic mix non-operationalized	9- Instruments incompatibility (no mix)	1- No mix before and during implementation

**Table 4. Type of interactions between instruments of the policy mix studied**

Source: authors

At the end of the analysis of the policy mix, we sum up those information into a table that enables to visualize the links between the instruments and the “fluidity” of implementation.

Each case is explained by the different variables exposed before. Indeed, the conditionality between M2.1 and the AECM is explained by local vulnerabilities. The economic vulnerabilities being more prioritized than the environmental and climatic ones into the local representations, it affects the agenda setting, as well as the implementation of the policy mix: the advisers in charge of realizing the diagnosis as well as the farmers are more concerned by tackling the economic precariousness of the farm. At the same time, the links between M4.1 and the M2.1 are implemented considering the coherence between their economical goals, which enables to underline the disconnection between economic goals on a hand, and environmental and climates ones on the other hand, led by the new CAP. Here, the multi-level governance traduces paradigms disconnections according to each level, but also the institutional fragmentation. Indeed, the fragmentation highlighted does not only concern the goal but also the administrations in charge of the policy mix: the polycentric governance and its effects on the policy mix are very clear through the example of the links between M4.1 and the AECM. It explains the lack of operationalization. Indeed, the competences distribution between services and directions illustrates different coordination capacities of public institutions: on behalf subsidiarity, the application of a European policy mix is delegate to national and / or regional organizations. But at the same time, it organizes mandatory principles that orientates priorities of organisms such as the ASP; defines competences that institutions have to assume, according to their

current organizations that lead, in Guadeloupe, to the fragmentation of services for the instruction of two measures of the policy mix, that is illustrated by the case of the softwares.

As mentioned before, the agrarian sector in Guadeloupe is structured around constituted chains (and in a certain measure by the lack of organization of some). Further than studying different stages of AACC policies, during their agenda setting and their implementation, analyzing the way an organized chain, the banana fruit one, deals with these policies during the two stages, offers a deeper insight into the AACC policies and the several variables outlined until now.

### **II.3. The climate change adaptation policies through the banana chain: agenda settings and implementation opportunities**

As one of the better structured chain in Guadeloupe, the banana fruit chain gives an interesting case study of the way ACC policies variables can be integrated into choice system of actors.

#### *A. AACC translation during agenda setting by the banana chain: use of the AECM for SBP priorities*

After having suffered a lot from an economic crisis, climate disasters and phytosanitary legislation at the beginning of the 2000, the chain has known an important restructuring process, centralizing direction, technical and commercialization services, into the banana fruit chain professional organization, which is called The Producers of Guadeloupe (LPG). This process created a more centralized, hierarchical and closed chain network what has been profitable during the AECM agenda setting. Moreover, this turning point has been the opportunity for the chain to elaborate good practices charters. The plan aims at reaching a “sustainable production”, a “healthier agriculture”, or a “more environmental-friendly agriculture”. It occurs that the SBP is exclusively based on CAP funds. Thus, it is interesting to see how the SBP programming periods follow the CAP ones and how the good practices promoted by SBP find their equivalents on the AECM dedicated to the banana fruit chain, according to an interviewee, who was at the head of the departement dedicated to the banana subsidies in the DAAF, during the writing of the AECM<sup>5</sup>.

Indeed, during the bottom-up process of AECM agenda setting, the banana fruit chain has been very active to defend the AECM dedicated to the banana production, according to the head of the STARF department, in the DAAF administration<sup>6</sup>. He assumes that “politically and socially, having a RDP without AECM dedicated to the banana fruit chain would have been a problem”. Nevertheless, he also recognizes that the AECM proposed by the banana fruit chain are not so innovative as the AECM pretend to be: indeed, the practices promoted by the chain for the AECM and into their SBP were already largely experimented and practiced by some farmers, such as planted fallows or leave cuts. The LPG presents important technical and scientific supports from a technical institute (IT2) and scientific centers, that give to the LPG and the farmers the capacities to face production limitations and even anticipate them. The practices promoted into the AECM and the SBP are useful to face several bans of phytosanitary products that the chain was used to use in order to face the black and yellow cercosporiose, a specific disease that affects the banana plants, but also in order to improve the bad reputation that the banana chain suffers from since a sanitarian scandal, for which it was in the dock (Bonin and Cathelin, 2014) : the chlordecone scandal, which made the national

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5 Semi-structured interview, conducted on the 27th, February, 2019

6 Semi-structured interview, conducted on the 25th, February, 2019

and local headlines at the beginning of the 2000 decade. It implicates a phytosanitary product, especially used for the banana production, which has been used between 1971 and 1993 on the FWI territories. The product is nowadays known for causing huge environmental and sanitarian effects. As explained for the AECM agenda setting process, the specific governance type acquires some shades. Indeed, this case study illustrates that the ‘invisibilization’ of ACC in Guadeloupe, further than relying on a chain-based agrarian structure, is determined by some resources of the chains: the technical legitimacy and the high level of centralization of the banana fruit network in front of the fragmentation of institutions of institutions (of State and Regional authorities) enable a privileged position of the chain during the agenda setting process. Moreover, the vulnerabilities are even more concrete with this example where the chain has to face phytosanitary bans and the chlordecone scandal that affects the potential of productions and possibilities of commercialization, while climate change is far from being the current priority. Using the AECM as funds to sustain the SBP, whom goals are not AACC, participate to the local paradigmatic translations of such policy.

### *B. Implementation synergy for new mix (type 2): AECM, M4.1 and SBP*

Concerning the policy mix implementation, the case study of the banana fruit chain highlights the opportunities presented by this chain-based agrarian structure presents to tackle the difficulties induces by the administrative governance. Indeed, the LPG plays a crucial role during the implementation of the policy mix: it gives technical advice about AECM practices thanks to the permanent monitoring of farmers by their dedicated technicians. The same technicians realize the AECD, and bring the different AECM and investment requests to the Regional Authority. LPG also redistributes some funds of the M4.1 to their beneficiaries.

The manner with which LPG uses these subsidies exacerbates the disconnection between some measures. Indeed, each technician assists a number of farmers and also assumes other tasks such as the portage of dossier for the CAP measure. It results that the AECM requests are competence of all technicians, considering that each helps the farmers they are dealing with, meanwhile the portage of the investments dossiers is competence of some other dedicated technicians. The same factor of disconnection we observed in the public administration (a DAAF department dedicated to AECM and another DAAF department in charge of fund requests for each chain) characterizes the LPG: the different technicians do not make this work of communication between the M4.1 and the AECM. Nevertheless, the LPG also provides a relay for M4.1 implementation, which illustrates the synergy led by the private sector: the “fluid” implementation can rely on actors who are not the first ones excepted for this task. For instance, for some requests, the LPG organizes pre-funds: each farmer presents his own dossier, but waiting for the funds payment by the ASP, the LPG loans the amount of the funds for each farmer, before recovering it when the payment is operated by the ASP. Moreover, thanks to the SBP, the chain promotes practices, the same than the ones supposed to be subsidized by the AECM. In front of the lack of subsidies for putting in practices the AECM, the LPG encourages the banana fruit farmers through financial supports, on their own private funds, on behalf of the SBP because they still have the responsibility of their plan conduct. Finally, thanks to the SBP too, and the coalition with a technical institute, the LPG provides labour supports in order to complete some practices. Thus, the delays generated between the instruction, payment, and practice of the AECM and M4.1, are reduced thanks to the LPG intervention, and enables reconnections between measures currently disconnected (type of mix 2-implementation synergy for new mix).



Politique		M2.1 PDR	M4.1 PDR	M10 PDR	SBP
	Instrument	Technical agrarian devices	Physical investments	AECM	SBP
M2.1 PDR	Technical agrarian devices	X	6- Mix with technical conditionality operationalized	7- Mix with technical conditionality partially implemented	1- No mix before and during implementation
M4 PDR	Physical investments	6- Mix with technical conditionality operationalized	X	5- Programmatic mix non-operationalized	1- No mix before and during implementation
M10 PDR	AECM	7- Mix with technical conditionality partially implemented	5- Programmatic mix non-operationalized	9- Instruments incompatibility (no mix)	1- No mix before and during implementation
SBP	SBP	2- Implementation synergy for new mix	2- Implementation synergy for new mix	2- Implementation synergy for new mix	X

**Table 5. Types of interactions between instruments of the policy mix studied, with the SBP**  
Source: authors

The role played by the LPG enables synergy between instruments from different nature (private and local ones; public and European ones) and for different goals (environment and climate change ones; economic, health and environment ones), illustrates a new kind of translation. The polycentric governance coupled with the organizational capacities of the banana fruit chain comes to explain the way that chain organization succeeds to fill the gap of power left by the public authorities and that offers reconnections possibilities. The measures, disconnected during their implementation, are reconnected thanks to some resources of the chain: the financial capacities as well as the technical supports and relays structure an efficient network for using a policy mix and reshaping it through their own code.

## CONCLUSION

This paper have the objectives to analyse the implementation process of the policy mix of AACC in agriculture sector in French West Indies.

From a theoretical framework based on :

- 1/ the analysis of the translation of policy instruments from international to local level ;
- 2/ the « fluid » reinterpretation of policy mix by processors ;
- 3/ and the grid of initial and reinterpreted policy mixes ;

We have demonstrated that :

- 1/ the understanding of AACC policy mix implementation must be read from four variables (multi-level governance, polycentric governance, local environmental vulnerabilities, structure of the policy network) ;
- 2/ the agenda setting of local AACC policy mix is conditioned by preexisting environmental agenda ;
- 3/ the implementation of the AACC policy mix is « fluid » because it is very fluctuant and dependent on the local structure of policy stakeholder relations (relevant ones and their relations with others according to their competences and skills) ; an interaction system which is embedded in the multi-level and polycentric governance ;
- 4/ fluidity means : local policy coalitions reinterpret goals and means of instruments and their mixes, their conditionalities, their incompatibilities or programatic initial designs (see tables n° 2, 4, 5).

This research is in progress: network and coalitions are still in data processing. We will integrate it in the next step of construction of the analysis. The network analysis focuss on the interaction system between actors (civils servants at all level, chain deputy and technicians, farmers...) who implement the mixes of the table 5. The data collecting was based on a grid including four main groups of data : understanding the policy process of AACC policy mixes (agenda setting, implementation) ; paradigms/advocacy of the interviewees (about environmental and climate vulnerabilities, about policy instruments) ; links between interviewees according to their involvment in the policy mix implementation (centrality, density, modalities) ; ressources and capacity (technical, political...).

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