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# **Harnessing the power of identity to encourage farmers to protect the environment**

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**Abstract:** We argue that farmers exhibit identity concerns that can be conducive or detrimental to environmental conservation. In addition to recognizing the existence and importance of these concerns, we posit how they modify traditional predictions in unexpected directions. We characterize the propensity to adopt environmental measures within a two-dimensional space defined by farmers' expectations about how adoption will impact profit as well as identity-related concerns. In doing so, we emphasize that identity concerns can be (inadvertently) activated and/or manipulated in directions that can be (un)favorable to socially desirable goals. We also develop some original and practical ways to better understand and exploit the identity dynamics to reach environmental conservation objectives.

**Key-words:** environmental conservation, farmers, identity, incentives.

**JEL numbers:** D03, Q12, Q57.

# Harnessing the power of identity to encourage farmers to protect the environment

## 1. Introduction

Farmers are widely recognized as major influencers of numerous environmental outcomes and many policies are dedicated to the agro-environmental nexus such as the European Common Agricultural Policy or the US Farm Bills. A traditional working assumption among economists and other analysts is that farmers are rational agents who engage in activities that will maximize their profits, regardless of other non-monetary considerations. Given that many conservation activities are not inherently profitable to individual farmers, conservation payments that increase net profits are generally considered to be an effective strategy to increase voluntary farmer participation in pro-environmental programs (e.g., Cary and Wilkinson, 1997). Even though there is a sizeable literature that examines the variety of other factors that influence farmers' decisions (e.g., Lastra-Bravo et al., 2015 for a recent meta-analysis), this working assumption has led analysts to omit important aspects from models of decision-making and hence from policy (Sheeder and Lynne, 2011). Consequently, and despite its intuitive appeal, policies based on this assumption have proven to be considerably less effective than expected in real world situations (e.g., Kleijn et al., 2001; Pattanayak et al., 2010; Ribaud, 2015).

This vexing situation has led agricultural and environmental economists to consider other factors (e.g., social influence, positional considerations<sup>1</sup>) that are likely to influence the behavior of farmers beyond those involving monetary profit (e.g., Sheeder and Lynne, 2011). Nevertheless, among potential candidates, one that has been largely ignored relates to identity concerns. There is, however, an increasing attention among economists to identity, notably to explain some puzzling results (beyond those related to the environment) that would otherwise seem irrational (e.g. gender inequality in the workplace, poor academic performance of low-income groups) (e.g., Akerlof and Kranton, 2010). Hence, without ignoring other factors that influence farmers' behavior regarding environmental conservation, our main objective is to emphasize that *identity concerns are a crucial and neglected determinant of farmers' behavior regarding environmental conservation*, especially among agro-environmental

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<sup>1</sup> Positional considerations correspond to situations where the desire to occupy a certain position or rank on the social ladder pushes people to adopt behaviors that will otherwise seem counterintuitive. For instance, some people may prefer having less of a good in absolute terms but more than others from a relevant reference group. In other words, relative standing matters (Salhi et al., 2012).

economists. Rather than simply recognizing the importance of identity with respect to farmer behavior, however, we also raise the likely possibility that several initiatives and political discourses, though well intentioned, may in fact be counter-productive by inadvertently motivating farmers to adopt polluting behaviors. Moreover, we contend that identity concerns can be leveraged so as to support pro-environmental objectives, and we suggest some practical ways to do so.

The remainder of the paper is organized as follows. The next section overviews some of the recent economic literature devoted to identity concerns, which has borrowed, albeit incompletely, from other social sciences, notably sociology and social psychology. We then analyze farmer behaviors in light of identity concerns in order to better understand their decisions related to environmental issues. We also provide several suggestions regarding how policymakers can tap into the ‘identity capital’ of farmers in order to encourage greater adoption of socially desirable behaviors. The final section concludes and proposes directions for further research.

## **2. Understanding how identity influences farmer behavior**

The social identity approach combines the social identity theory (Tajfel and Turner, 1979, 1986) and the self-categorization theory (Turner et al., 1987). Individuals can define themselves, and behave, both as individuals and group members (Turner, 1982). Social identity relies upon the presence of other people or social groups and refers to a sense of belonging to a social group and connection with other group members. Tajfel (1978) defined the social identity as “that part of an individual’s self-concept, which derives from his [or her] knowledge of his [or her] membership of a social group (or groups) together with the value and emotional significance attached to that membership”. This social identity includes how the individual is regarded by others and fits within a particular social group. The social identity perspective argues that the extent to which a social identity is part of the individual’s self-concept depends on whether he/she self-categorizes him/herself as a group member so that group membership is a function of his/her own cognitive processes and not just whether other in-group members view her/him as a group member (Turner et al. 1987). Social identity emphasizes the similarities that characterize members of groups such as distinct geographic communities, cultures, professions, religions, or political parties. Crucially, members of these groups prescribe to group-specific norms that influence their ‘beliefs about how they and others are supposed to behave’. People generally have several social identities corresponding

to the groups in which they belong (LeBoeuf et al., 2010). A single individual may, for example, belong to groups that pertain to such separate but simultaneous identities as an organic farmer, a hunter, and an inhabitant of a rural village. These identities are complex, have fuzzy boundaries, frequently overlap, and may even conflict (Reed et al., 2012; Sulemana and James, 2014). An important issue relates to what particular identity will be activated under any given circumstances. Oakes (1987; see also Benjamin et al., 2010; Cohn et al., 2014) posits that a given identity and its related social norms will primarily direct behavior when this identity is made salient. An identity focus can be activated either because a specific identity is dispositionally salient to a given person or because situational cues can make an identity cognitively active.

Economics has recently extended its analytic apparatus to integrate identity concerns. The preeminent authors (Akerlof and Kranton, 2000; 2005; 2010) borrowed primarily from social psychology and focused on the concept of social identity (Davis, 2007, 2011). Akerlof and Kranton (2000) augment the traditional utility function by incorporating social group norms that prescribe ideal or exemplary behavior for individuals who are members of certain social groups. Under this framework, individuals still seek to maximize utility, but the scope of the tradeoffs they face is now extended to include the effects of their acting in conformity with or contrary to the social norms of the groups with which they identify. In this way, behavior that conforms (departs from) to group norms reinforces (undermines) one's membership in valued groups and demonstrates that s/he is a 'good' group member (Davis, 2011). Dawes et al. (1990) show that individuals are willing to incur considerable personal costs in order to benefit the group to which they belong.

Recently, several researchers have exhibited a renewed interest in applying sociological and social psychology research on identity to environmentally-related behaviors (Fielding and Hornsey, 2016 and Fritsche et al. 2018 for recent reviews) and more specifically to farmers (e.g., Burton, 2004; McGuire et al., 2013, 2015; Sulemana and James, 2014; Van Dijk et al., 2016; Wahlhütter et al., 2016). In general, this literature, based on studies conducted in developed countries (e.g., European Union, United States), asserts that farmers' decision-making process and behaviors also involve identity concerns and that these concerns can

sometimes crowd-out financial motivations<sup>2</sup> (Van Dijk et al., 2016). According to Warren et al. (2016), for many farmers (study conducted in the Lockerbie area, Scotland) “*farming is a vocation and a lifestyle, with profitability being a means to an end, not an end in itself, and farmers often have strong emotional attachments to their land, livestock and farming style (...). Consequently, their decision-making processes are not limited to business-related factors alone but incorporate ‘whole life’ considerations.*” Farmers are frequently described as possessing multiple social identities that can be related or unrelated to farming activities and prioritized depending on contextual factors (Burton and Wilson, 2006; McGuire et al., 2015). These identities determine how farmers see or think about themselves and how they think or would like others to see them (Sulemana and James, 2014).

Among the identities frequently discussed in the literature, two distinctions usefully illustrate how identity concerns can prevent the adoption of environmentally-friendly agricultural practices. These relate to the productivist versus conservationist identity and the traditional versus technological identity (Sulemana and James, 2014; McGuire et al., 2013).<sup>3</sup> The productivist identity is frequently associated with the capable or successful farmer (at the individual and/or collective level), while a more conservationist identity is perceived as degrading to a farmer’s reputation, especially among members of the productivist community (Burton and Wilson, 2006; Ribaud, 2015; Wahlhütter et al., 2016). Indeed, the presence of in-group benefits has been cited as a reason why in many cases farmers opt for productivist behavior over conservationist behavior, even in the presence of supporting economic incentives such as conservation payments (Burton and Wilson, 2006). One recent study even

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<sup>2</sup> Despite terminology similarities and some overlap, our analysis differs from the well documented motivational crowding-out where monetary incentives backfire by crowding-out intrinsic motivations (for a recent review, see Rode et al., 2015 in the context of environmental conservation). For instance, even in the absence of monetary incentives such as unsubsidized agro-environmental measures, identity concerns can be activated in a sense detrimental to the desired change. Moreover, in our case, monetary incentives do not necessarily reduce the expected behavior compared to its level before their introduction (as in the motivational crowding-out) but they can fail to produce the expected change among farmers because of their counterproductive consequences on farmers’ identity.

<sup>3</sup> The productivist and conservationist terms can both correspond to real identities and/or normative expectations of farmer identities. Our use of these terms is frequently borrowed from the quoted authors. Unfortunately, this use is not always consistent across studies.

goes so far as to suggest that identity<sup>4</sup> “is the most important determinant of farmers’ intention to perform unsubsidized agri-environmental measures” (van Dijk et al., 2016).

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<sup>4</sup> Let us mention that Van Dijk et al (2016) were specifically referring to self-identity.

### 3. Harnessing identity concerns to promote conservation among farmers

*“The landscape of any farm is the owner's portrait of himself.”*

*(Leopold, 1939)*

Identity concerns have allowed scholars to make sense of outcomes in several domains that had previously been considered irrational and vexing. Some examples include the limited success of ambitious conservation programs (e.g., Wu et al., 2004) or overinvestment in highly visible items, e.g., ‘Harvestore’ silos in the rural United States. According to Rogers (2003), “because Harvestores are extremely expensive (...) most agricultural experts recommend that U.S. farmers buy a much cheaper type of silo for storing their corn and hay silage. But the status-conferring quality of the Harvestores appeals to many farmers.” In a similar vein, reaching high yields became a status marker in several farming communities. In some countries, prestigious clubs were created, such as the 10-tons wheat club in France, and farmers were willing to devote considerable resources to become club members, even if it was not economically profitable (Salhi et al., 2012). In several circumstances, identity concerns interact with profitability considerations, either in a neutral, positive or negative way. When identity concerns are aligned with economic incentives, they may even go unnoticed.

We contend that the elements of conservation policies can thus reinforce, threaten, or be inconsequential to a farmer’s identity. Negative identity-conveying goods generate disutility that stigmatizes the adopter and undermines his/her identity. Similarly, positive identity-conveying goods can reinforce the adopter’s identity-based utility. Leaving weeds in fields, for example, or generating lower-than-average crop yields can jeopardize a farmer’s (productivist) identity by fostering the impression of laziness or incompetent management (Nassauer, 1997; Burton, 2012), despite the fact that the practices that lead to these conditions may well be beneficial for biodiversity. Similarly, some pro-environmental proposals may imply a loss of autonomy (e.g., due to control by external authorities, additional obligations, etc.) which threatens what is often a fundamental dimension of a farmer’s identity: his/her independence. The stigma that arises from negative identity goods may also create negative social attitudes and discrimination against farmers who adopt environmentally-friendly measures, especially from in-group members (e.g. the local productivist community). Nevertheless, such situations are not carved in stone and have the potential to evolve. It has been argued that interactions with other actors such as governmental authorities, associations,



and producers' unions that are already engaged in pro-environmental initiatives can lead to an increase in the salience of a more pro-environmental identity or an evolution in a farmer's idea of what makes a good farmer (Riley, 2016; Burton and Paragahawewa, 2011). Moreover, dueling identities (e.g., productivist vs. conservationist, traditional vs. technological) can be characterized as a kind of zero-sum game. This implies that one strategy to overcoming the negative effects of identity on the adoption of environmental behavior could involve changing the prevailing belief that these identities are mutually exclusive by considering them as complements rather than substitutes. Recently, Ribaudo (2015) suggested that well-crafted environmental policies can harness productivist and technology-based identities to reach environmental outcomes. Rather than linking payments to practice costs,<sup>5</sup> he argued for a pay-for-performance approach that exploits the desire and ability of farmers to act entrepreneurially or to introduce innovative ideas, allowing them to demonstrate managerial skills to other farmers.

From a conceptual viewpoint, we propose that environmental policies should be characterized within a two-dimensional space that describes their propensity to be adopted according to their anticipated consequences for a farmer's profitability and identity (Table 1). Of course, we recognize that other factors influence farmers' decisions but for the sake of clarity, we limit our analysis to these two crucial dimensions. Our framework does not do justice to the whole range of interactions between these two dimensions. It is somewhat simplified by suggesting that the two dimensions (identity and profit concerns) function only in a simple additive way. Although a study of the whole set of possible interactions between these two dimensions is beyond the scope of the paper, it is important to stress that they could co-exist and interact in a number of other ways. For instance, one could imagine a model where negative identity implications reduce the profit effects to zero, irrespective of the effect that profit concerns could have independently. The dimensions could also interact in more complex ways, for example, profit motivation reducing positive identity effects (rather than

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<sup>5</sup> In many agri-environmental programs, farmers are generally compensated for the monetary loss due to the adoption of environmentally friendly practices. They are, however, not rewarded for offering more than the minimum necessary to receive the payment and productivist farmers even incur a social cost (e.g., by losing their top producer label). Consequently, promoting high productivity of environmental outputs among farmers can be a useful strategy likely to break the perceived opposition between productivist and conservationist identities (Ribaudo, 2015). Nevertheless, such a strategy could be costly, notably in terms of transaction costs due to the difficulty-to-measure individual (environmental) productivity.

adding on to independent identity-based motivation). Even if it does not cover all the possible interactions between identity and profit, this framework can help to determine whether and how identity will be impacted by the introduction of various incentives as part of proposed environmental policies.

**Table 1: Expected propensity to adopt an environmentally friendly measure as a function of profitability and identity expectations**

	Profit enhancing (PE)	No profit impact (NP)	Profit reducing (PR)
Identity reinforcing (IR)	++	0+	--
No identity impact (NI)	+0	00	-0
Identity undermining (IU)	+-	0-	--

The presence and number of '+', '-' and '0' indicate respectively, the positive, negative or neutral expected effect of the environmentally friendly measure on the profit and identity dimensions, *ceteris paribus*.

Using this framework, it becomes easier to understand how identity concerns can explain why farmers may not engage in conservation activities even when seemingly attractive monetary (dis)incentives are at stake. Rather than simply verifying whether the proposed changes are economically profitable and environmentally friendly, we argue that it is crucial to understand how the proposed modifications may interact with identity. Let us discuss some cells of this table. The cell (PE/IR) corresponds to a situation where the proposed behavioral change is both profit enhancing and identity reinforcing and should result in the highest level of adoption. Some cells correspond to indeterminate end-outcomes (PE/IU or PR/IR) because the profit and identity effects play in opposite directions and the result in terms of adoption levels depends on which effect is the strongest, *ceteris paribus*. Some cells describe situations where there is a *status quo* on one of the two dimensions and a positive impact on the other dimension (NP/IR or PE/NI) and should result in intermediate levels of adoption. Other cells correspond to situations where there is a *status quo* on one of the two dimensions and a negative impact on the other dimension (NP/IU or PR/NI) and should result in a lack of adoption. When the status quo applies to profit and identity (NP/NI), nothing happens in terms of adoption levels. The remaining cell (PR/IU) where the two dimensions are negatively impacted corresponds to a situation where the expected propensity of adoption is the lowest, not to say null.

An implication of the previous discussion is the need to design and frame desired behaviors as both identity- and profit-enhancing. Sometimes, farmers are reluctant to consider some innovative environmentally-friendly measures because they are attached to traditional practices that constitute identity markers. In some circumstances, it could make sense, for example, to emphasize that the proposed environmental changes are not necessarily new, but are a rediscovery of ancient practices that meet contemporary needs. Warren et al. (2016) argue that short rotation coppice “is not the ‘new’ crop that it is often perceived as, but an ancient practice being re-imagined to meet contemporary objectives. A cultural rediscovery of these historic linkages could aid the acceptability of energy crops in contemporary rural settings”. Interestingly, they draw this conclusion in a context where large potential profits would be insufficient to persuade many farmers to adopt this innovation. Framing environmental practices as historical framing practices can exploit the complex relationship between history and identity. Beck (1990) argues that the identity of a given individual depends on his/her past. The individual is especially concerned with his/her past when his/her current identity is threatened. According to Beck (1990), “a sense of past is essential to a sense of self”. The concept of nostalgia is introduced as “individual or group histories that are charged with emotional meanings and used in informing our sense of self” (Arnold, 2017; Beck, 1990). In his recent in-depth study of some farmers from Iowa and Tennessee, Arnold (2017) explains that they “used their family legacies and life experiences on the farm to inform their sense of who they are and what a farmer ought to be” (see also Mer, 2004). Moreover, rather than being perceived as propositions originating from out-group members, the rediscovery of old practices is credited to in-group members, even if they are from past generations. For instance, some organic farmers admit that they are just returning to the traditional methods used by their fathers and grandfathers.

The effect can be strengthened, if the message such as a rediscovery of ancient and environmentally-friendly practices is transmitted through in-group messengers, *e.g.*, old and well known farmers in the concerned community. Indeed, it is well established that “in-group sources are influential because they are perceived to be more trustworthy and credible by in-group members” (Fielding et al., 2016). Sometimes, even if it is well-intentioned, the same message provided by an out-group member can inadvertently backfire because it can be perceived as suspect and identity undermining by in-group members (Opatow and Brook, 2003). In short, the messenger matters beyond the message and must be selected with care to reinforce the message impact.

When in-group members have descriptive norms (i.e., what most people do) that are not aligned with the environmental objectives, several strategies can be considered. Instead of emphasizing positive descriptive norms of out-group members or negative descriptive norms of in-group members that are likely to generate counterproductive results, it is more appropriate to consider the use of an injunctive norm (i.e., what most people from the in-group approve of doing) (Farrow et al., 2017). For instance, publicizing that more than 90% of crop farmers in a given region systematically spray herbicides at a given period in order to keep their fields clean from weeds constitutes an example of descriptive norm. At the same time, if most crop farmers of the same considered region disapprove systematic spraying and rather recommend (without applying) integrated weed management, this recommendation constitutes an injunctive social norm. Sometimes, descriptive norms could also be used more advantageously by creating subgroups from the in-group members designed to better leverage the power of social comparison. Demarque et al., (2015) point to the importance of framing and wording in communicating descriptive norms. An implication of their work is that rather than calling attention to the high percentage of farmers engaging in an undesirable behavior, a more effective strategy could emphasize the absolute number of farmers engaging in the desirable behavior or a positive trend in the frequency of the desirable behavior (Sparkman and Walton, 2017).

Moreover, an adequate analysis of the relationship between profitability and identity would require taking into account a variety of time horizons. For instance, several environmentally friendly behaviors deliver immediate, negative consequences for identity and delayed economic benefits. Innovations addressing climate change are frequently perceived as immediately and individually costly in economic and identity terms, while promising future collective benefits (Hobman and Frederiks, 2014). Moreover, a farmer's identity frequently (but not necessarily) involves a kind of cultural transmission, notably from parents to children. We believe that legacy concerns bear on identity and can therefore be leveraged in order to influence the current choices of farmers. The desire to build a lasting and positive legacy for oneself (i.e. the desire to form a positive connection with others in the future in order to be remembered and to live on symbolically) can constitute a powerful source of motivation, leading people to adopt more prosocial behaviors in light of their concern for their social image in the eyes of *future others* vs. *immediate others* (Wade-Benzoni et al., 2010; Wade-Benzoni et al., 2012; Zaval et al., 2015). Sometimes, it can make sense to use legacy

concerns related to family (rather than occupational) identity in order to make salient some family related norms well-aligned with environmental goals.

Another research direction concerns the temporality dimension of identity-based interventions. For example, we contend that there are strategic moments where farmers' identity is more malleable and easier to align with socially desirable goals. Identifying these moments will offer policymakers 'opportunity windows' to influence future environmental outcomes. An intuitive candidate is the training of new farmers that is frequently supervised by public authorities in several countries. During this training period, policymakers and trainers could encourage future pro-environmental behaviors by changing the norms associated with farmers' professional identity. An original way to reach such an objective would be to co-design with farmers and encourage them to take a professional oath analogous to the Hippocratic oath for doctors.

Identity-related considerations can be leveraged or harnessed to encourage some desirable changes. These identity-related considerations constitute an additional strategy that has thus far been ignored or neglected (and inadvertently used in a counterproductive way) by policymakers aiming to modify farmer behaviors. Let us consider an illuminating example. It has been shown that subtle modifications in wording can exert significant influence on people and even lead to self-fulfilling prophecies. A series of studies (e.g., Bryan et al., 2011; Bryan et al. 2013; Bryan et al., 2014) show that using words that highlight the identity implications of a given behavior can be used either to encourage socially desirable behaviors (e.g. voting, helping) or curb socially undesirable behaviors (e.g., cheating). Very subtle manipulations of words such as the use of nouns (which foster the perception that the behavior is reflective of the self) rather than equivalent descriptive action verbs (which do not activate the perception that the behavior reflects one's identity but simply indicates the occurrence of a given action) can influence decision-making. For instance, using identity-conveying words such as being 'a cheater (voter/helper)' rather than 'someone who cheats (votes/helps)' helped to promote (curb) (dis)honest behaviors (Bryan et al., 2011; Bryan et al. 2013; Bryan et al., 2014). More specifically, Bryan et al. (2013) found that people were less likely to cheat for monetary gain when the experimental instructions read, "Please don't be a cheater" rather than "Please don't cheat". In a similar vein, Bolkan and Andersen (2009) showed that preceding a request with a question that creates a salient self-image leads them to be more likely to behave consistently with that image by complying with the request.

This emerging literature suggests that (even involuntary or induced self-) *labeling* of farmers can encourage (discourage) environmentally-friendly choices. Van Dijk et al. (2016) argue that the labeling technique can “counterfeit the undermining effect that extrinsic factors, such as a reward, can have on intention (...) by shifting the motivation from driven by the reward to self-identity. In the case of AES [agri-environment schemes] this could be done by labeling farmers that perform subsidized AES as responsible farmers; “You participate in voluntary AES; this shows you are a farmer that cares about the protection of nature”. For instance, categorizing farmers who have productivist identities as ‘polluters’ (rather than individuals who pollute sometimes) or even ‘subsidy-hunters’ can be counter-productive. If such words lead to social labeling of farmers and self-fulfilling prophecies (Becker, 1963), the overall result can diverge greatly from the expected one. On another side, exploiting the farmers’ desire to see themselves as good and not bad people thanks to subtle word manipulations can reinforce the relationship between identity and socially desirable behaviors. The repeated use of such language could even cause these associations to become internalized and chronically active (see Cohen and Morse, 2014 in a different context). Simply said, our previous discussion suggests that words can constitute a low-cost and (hitherto unexploited) identity-related capital that can be harnessed to reach socially desirable goals (Clot et al., 2017).

Moreover, even if we focused our discussion on the occupational component of the farmer’s identity, other social identities may also be relevant for farmers and could encourage conservation. For instance, in France, farmers’ identity frequently includes dimensions related to family, hunting and rural communities, or even to the nation as a whole. By making salient one or several of these social identities that are (better) aligned with the expected conservation goals, public policies can sometimes weaken or override other social identities that are less environmentally friendly. A related strategy is the use of a superordinate social identity that is better aligned with environmental objectives. For instance, emphasizing a superordinate identity, such as being a member of a national or supranational community (Finnish citizens or European farmers) or even citizens of the planet can help reducing the detrimental effects of some inter-group conflicts on environmental resources<sup>6</sup> (Opatow and Brook, 2003). This

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<sup>6</sup> Opatow and Brook (2003) showed that the protection of an endangered species on ranchers land became a source of conflict between ranchers and environmentalists. Each group perceived itself as more environmentally friendly while the other group was untrustworthy. Because of the conflictual context, even appropriate environmental propositions were dismissed because they were endorsed by the mistrusted outgroup. To

superordinate identity can subsume conflicting subgroup identities and transform the group dynamics from one of ‘us’ *versus* ‘them’ to ‘we’ (Fielding et al., 2016).

#### 4. Conclusion

Beyond monetary considerations, we have emphasized that farmers’ decisions and behaviors are also determined by identity concerns. These identity concerns can substantially modify theoretical predictions regarding the behavior of farmers in unexpected directions. Integrating these concerns into an analytical framework constitutes a promising approach to better understand the motivations of farmers, which is of utmost importance to environmental policymakers. We introduced a conceptual framework that characterizes the likelihood that farmers will adopt environmental policies according to their expected consequences for profit and identity-related concerns. We note that policymakers can also use identity-related considerations as a powerful and low-cost complement to other policy tools. In some cases, identity-based interventions can be considered as nudge approaches (Sunstein and Thaler, 2008).

We have suggested several practical strategies that leverage identity concerns, such as emphasizing historical linkages, manipulating legacy concerns, exploiting ‘opportunity windows’ and the use of strategic labeling. Rather than providing an exhaustive review of the subject or attempting to arrive at any definitive conclusions, this work should be viewed as an invitation to explore further the important issues related to the nature and evolution of farmer identities, especially as it relates to environmental attitudes and behaviors. Among issues that remain to be addressed, there is the interplay between personal<sup>7</sup> or social identity, especially when designing environmentally friendly policies. Indeed, it is conceptually plausible that a policy can be socially identity reinforcing but be personally identity destroying, or vice versa. A challenging extension would be to model a farmer’s decision-making with trade-offs

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overcome these detrimental effects, Opatow and Brook (2003) and Brook et al. (2003) suggest collaborative processes with equal-status interactions and shared power between groups in order to promote feelings of group membership that build trust between conflicting groups.

<sup>7</sup> We use the following definition of personal identity proposed by Hewitt (1997) as “a sense of self built up over time as the person embarks on and pursues projects or goals that are not thought of as those of a community, but as the property of a person. Personal identity thus emphasizes a sense of individual autonomy rather than of communal involvement.”

between personal and social identity. Lastly, it is worthwhile to investigate the power of identity concerns in various contexts, given that farming realities vary extensively across the globe. Consequently, considering the extent of the model applicability across contexts (and beyond the economically developed world) constitutes an important challenge. For example, would profit-based motivations override identity concerns in economically deprived contexts? Would identity concerns prevail over all others in strongly traditional societies?

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