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Abstract

We study the relationship between culture and environmental conservation through the lens of deforestation. Focusing on Sub-Saharan Africa over the period 2001-2021, we show that changes of national leaders affect deforestation in a way that depends on the environmental culture of their ethnic group's. We use data on folklore to measure the importance of forests in group-specific culture. We find that deforestation and land-intensive activities increase in the ethnic homelands of leaders whose ethnic groups have no or little forest-related culture. These patterns are reversed when the leader's group has a salient forest culture. Our results suggest that culture is an important lever for environmental conservation in Africa.

Keywords: Culture, Deforestation, Politics, Folklore, Ethnicity, Africa

JEL Code: Z1, Q5, D7, J15

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"We are born believing. A man bears beliefs as a tree bears apples."

Waldo Emerson

1 Introduction

Climate change and biodiversity loss are among the most pressing global challenges. Because tropical forests act both as major carbon sinks and biodiversity reservoirs, limiting deforestation is central to addressing them. Yet deforestation remains pervasive, particularly in low-income countries where institutional weakness and limited public demand for conservation constrain policy effectiveness. While economic and institutional determinants of deforestation have been extensively studied, much less is known about the role of cultural factors, such as social norms and beliefs, that shape both behavior and policy responses (Guiso et al., 2006; Banerjee and Duflo, 2011; Benabou and Tirole, 2003). These cultural traits, transmitted through education and socialization (Bisin and Verdier, 2025; Bezin, 2019), may be critical to understanding heterogeneity in environmental preferences and conservation outcomes.

In this article, we examine the role of culture in environmental conservation. Africa provides a particularly relevant setting: conservation initiatives often face institutional constraints, yet nature and the environment are deeply embedded in local cultural identities (Gottlieb, 2006, Mbiti, 1990). In many societies, cultural transmission occurs through oral traditions. Traditional folktales often embed ecological knowledge and principles of sustainable resource use (Thompson et al., 2024). These narratives are frequently intertwined with spiritual belief systems: among the Chewa, forests are sacred spaces for ancestral spirits (Dudley et al., 2010; Amanze, 2023); for the Maasai of Kenya, forests are sites of initiation linked to Enkai, their supreme being; and in West Africa, Vodun cosmologies view forests as boundaries between the human and the spiritual worlds (Deopa and Rinaldo, 2024).

These examples suggest that cultural values can shape environmental priorities at the highest political level. We therefore ask whether environmental beliefs embedded in ethnic culture influence leaders' policy decisions, and whether such effects can be detected in the leaders' home regions. In the mid-1980s Burkina Faso, President Thomas Sankara launched a nationwide anti-desertification campaign: over 10 million trees were planted, approximately 7,000 villages established nurseries, and reforestation was framed as a civic obligation. Sankara explicitly linked forest conservation to national identity and collective responsibility. In Namibia, President Sam Nujoma, himself from the Ovambo ethnic group, traditionally associated with animist practices, introduced legislation in 1998 granting communities formal rights to manage and benefit from local wildlife. In Liberia, President Ellen Johnson Sirleaf (2005-2017), from the Gola ethnic group, which maintains spiritual traditions linked to forests, signed a voluntary partnership agreement with the European Union in 2013 to curb illegal logging, which included a timber traceability mechanism. In addition to this anecdotal evidence, existing research highlights how environmental policy is shaped by political incentives, particularly in democracies and states with greater capacity (e.g. List and Sturm, 2006; Burgess et al., 2012). A parallel literature shows that national leaders often favor their own regional or ethnic constituencies (e.g. Hodler and Raschky, 2014; Burgess et al., 2015). These cases and contributions motivate our central question: do environmental beliefs embedded in ethnic culture influence national leaders' policy decisions, and are their effects observable in the leaders' home regions?

We make two contributions. First, we develop a dynamic political-economy model in which a leader's policy choices depend on the environmental preferences of her ethnic group.[1] The model features two ethnic groups residing in distinct regions and differing in their forest preferences. A national leader, drawn from one of these groups, determines fiscal policy and forest management while needing to secure the political support of her co-ethnics to remain in power.[2] Deforestation results from the leader's forest management effort, which trades off tax revenues and land-use rents against the cost of forest protection and exploitation. Citizens derive income from wages and land rents but experience disutility from local deforestation. The equilibrium forest outcome depends on the strength of forest preferences within the leader's ethnic base: when co-ethnics place limited symbolic or economic value on forests, the leader invests less in protection and deforestation rises in her homeland; when forest preferences are strong, the opposite holds. Because forest cover affects the productivity of land-intensive activities, these shifts also alter the sectoral composition of output, with sectors such as extensive agriculture or charcoal production expanding with deforestation and contracting otherwise.

Second, we test these theoretical predictions using new data on cultural beliefs. We construct a measure of ethnic-specific environmental culture from folklore narratives, building on Michalopoulos and Xue (2021), who introduced into economics the comprehensive catalog of folktales collected by anthropologist Yuri Berezkin. These oral narratives, transmitted across generations, reflect traditional beliefs and values, including those related to nature and resource use. The folklore data are geo-referenced using the Ethnographic Atlas, which maps the estimated pre-colonial territories of African

[1] Bisin and Verdier (2025) also conceptualize culture in terms of preferences.

[2] This assumption stems from prior theoretical studies of ethnic favoritism (Bates, 1983; Padro i Miquel, 2007; Caselli and Coleman, 2013).

ethnic groups.[3] For each ethnic group, we compute the number of folklore motifs, defined as recurring episodes or images in the oral tradition, whose description contains the words "forest" or "tree". We use this variable as a proxy for the salience of forest-related culture.

Empirically, we combine this measure with spatially disaggregated data on deforestation, political leaders, and ethnic characteristics (area, population, traditional specialization, domestic organization, etc.) for 363 homelands across 29 African countries (2001-2021). Deforestation is measured using satellite data on annual forest cover loss from Hansen et al. (2013). Controlling for a rich set of fixed effects and time-varying covariates, we find that the ethnic homelands of political leaders experience significantly *higher* deforestation when their ethnic group has no forest-related culture. However, this effect is attenuated, and eventually reversed, when leaders originate from ethnic groups with stronger forest-related culture. When the cultural salience of forests exceeds the median, leaders' homelands exhibit *lower* deforestation than other regions. We interpret these results as evidence that political leadership and cultural values jointly shape environmental outcomes. The symbolic importance of forests and trees in a group's collective narratives influences leaders' policy choices and, ultimately, the geography of deforestation across Africa. We perform a series of counterfactual exercises which suggest that culture is a substantial factor of deforestation patterns. Our estimates suggest that in countries like Togo or Cameroon, where leaders in power over our period of study had a relatively low forest culture, deforestation could have been reduced by 8% or more if leaders with a more forest-oriented culture had been in place.

A series of sensitivity analyses reinforce these results. We use closely elected leaders to mitigate endogeneity concerns, control for leaders' regional rather than ethnic origin, and conduct placebo tests using a six-year pre-treatment window (the average term in office in our sample). We find no evidence of differential pre-trends when comparing ethnic homelands that either never held national political power or had not yet done so at the time the new leader assumed office. Moreover, we document that the effect of forest-related culture is short-lived, emerging primarily within the first two years after a leader's accession to power. It is also stronger among ethnic groups in which African Traditional Religions remain prevalent. In contrast, we observe that alternative components of folklore, those emphasizing production, growth, or subsistence, generate the opposite pattern, with higher deforestation when they are more prominent in the leader's ethnic culture.

[3] This dataset has been used, among others, to study morality (Enke, 2023), concerns over women's chastity (Becker, 2024), gender norms (Dincecco et al., 2024), and antisocial behavior (Le Rossignol et al., 2023).

Our main results are also confirmed when using a Regression Discontinuity Design (RDD) methodology on the subset of split homelands, i.e. homelands spanning two different countries. Recomputing deforestation for cells of 0.1×0.1 degrees of latitude and longitude, and computing for each cells the distance to the international border, we compare cells located on each side of the international border, when one of the side is treated, i.e. when in one of the countries a leader from the ethnic group comes into power. The RDD results show opposite patterns depending on the ethnic group forest culture: when it is high, the leader treatment decreases deforestation ; when it is low, it tends to increase it.

We next explore the mechanisms through which these effects operate. We show that the influence of leaders' cultural backgrounds is mediated by policy decisions related to forest management. First, using three ecological indicators (leaf area, photosynthetically active radiation, and biomass), we find relatively more *reforestation* in the homeland of leaders from groups with a stronger forest-related culture, suggesting that these leaders implement forest protection policies. Second, complementary evidence from data on World Bank aid projects indicates that these homelands receive more initiatives explicitly targeting environmental protection and land conservation. Taken together, these results suggest that both political leadership and the environmental symbolism embedded in ethnic cultural narratives translate into concrete policy actions that affect patterns of forest management across African countries.

Finally, we examine the broader economic implications of these cultural values. In the homelands of leaders with more salient forest-related culture, we observe relatively more agriculture-related projects and higher agricultural yields, consistent with a shift toward more intensive forms of land use in response to reduced land availability. By contrast, we find no differential effects on mining activity or nighttime luminosity, suggesting that environmental conservation does not come at the expense of aggregate economic performance.

Contribution to the literature. Our paper contributes to the literature on the interactions between culture and institutions (Alesina and Giuliano, 2015, Acemoglu and Robinson, orth) by showing that the cultural values of political leaders' ethnic groups shape their environmental policies.[4] We complement the literature that studies how the environment shapes cultural values (Giuliano and Nunn, 2020) by exploring the reverse channel-how cultural values shape the environment.

Our results indicate that, beyond well-established drivers of deforestation such as economic incentives (Angelsen, 1999, Foster and Rosenzweig, 2003) and governance

[4]See Besley and Persson (2019) for a model on the interactions between environmental values and politics.

(Ostrom, 1990, Burgess et al., 2012),[5] cultural factors are also important determinants of deforestation. We also contribute to debates on environmental quality in developing countries (Greenstone and Jack, 2015). Standard measures suggest that citizens place low monetary value on environmental quality, and political economy theories predict systematic under-provision. Our findings overturn both views. We show that African cultural values embed concern for environmental stewardship, and that leaders rooted in forest-related cultures protect nature in their ethnic homelands. These results suggest that cultural legacies can mitigate, rather than exacerbate, political economy distortions in the provision of environmental goods.

Our paper challenges prevailing views in both political economy and development economics. The literature on political leaders and favoritism emphasizes distributive favoritism along ethnic or regional lines (Jones and Olken, 2005; Hodler and Raschky, 2014; Burgess et al., 2015; De Luca et al., 2018; Dickens, 2018; Widmer and Zurlinden, 2022; Amodio et al., 2024). We uncover a distinct and previously overlooked channel: cultural favoritism, whereby leaders' policies reflect the (ecological) culture of their own ethnic groups. In doing so, we broaden the scope of favoritism beyond material transfers and show that cultural heritage can shape policy priorities in unexpected domains.

The next section presents a simple political economy model linking deforestation to environmental preferences. In section 3, we describe the data, before turning to the baseline empirical methodology and results in section 4. Section 5 contains an analysis of the dynamic effects and a variety of robustness exercises. Section 6 presents an alternative identification strategy based on a regression discontinuity design. Section 7 discusses our results on environmental policies and economic activity. Section 6 concludes.

2 Theoretical Framework

In this section, we develop a simple model that captures the interaction between citizens' forest-related culture (modeled as a pro-forest preference), an autocratic national leader, and an economy with a land-intensive sector.

2.1 Setting

We consider a repeated economy with a set of citizens of size 1. Citizens belong to one of two ethnic groups that live in two distinct regions, $j \in \{A, B\}$, and the population share of group j is $0 < \pi^j \leq \overline{\pi} < 1$.

[5] See also Souza-Rodrigues (2018), Berman et al. (2023), Assuncao et al. (2023) and Bareille et al. (2023). For an overview, see Balboni et al. (2023).

The economy of each region is characterized by two productive sectors using two factors. Local firms compete with many firms (not necessarily located in the country), they maximize profits and use technologies characterized by constant returns to scale.The two productive sectors or industries are labeled 1 and 2, and they use two inputs, (forested) land and another factor such as labor, respectively labeled D and L. Factors can move freely between industries within each region. Let r and w denote the respective rental prices of land and labor. The amount of labor available is fixed (L^j) and the amount of land used in production is D^j. The prices of output are labeled p_1 for sector 1 and p_2 for sector 2.

Sector 1 is relatively land-intensive, corresponding to traditional extensive agriculture or charcoal production. Sector 2 is less land-intensive, corresponding to mining or intensive agriculture.

The country has a centralized political system and each group has a set of potential presidents. At each period of time, there is a president in power who belongs to one of the two groups, $j \in \{A, B\}$. The president (i) cares about the rents he gets through tax collection and the cost he pays for cutting forest or to protect it. Deforestation in region i depends on the effort e^i made by the president with $D^i = d(e^i)$, with $d' > 0$. In order to ensure the existence of a solution, we also assume that $\frac{d''/d'}{c''/c'} < 1$. The president's effort can be targeted to increase deforestation ($e^i \geq 0$) or to protect the forest ($e^i < 0$). This effort induces a convex cost denoted by $c()$. It is U-shaped and reaches its minimum when the effort is null ($c(0) = 0$). This assumption reflects the fact that both cutting or protecting forest is costly.

The president's (P_i) total present utility is thus given by

$$U_{P_i}(\tau, e^i, e^j) = \tau - c(e^i) - c(e^j) \tag{1}$$

The citizens care about their labor and rental income and about forest in their homeland if they have a "forest culture". We denote $\theta^i \in [0, \overline{\theta}]$ the weight citizens of group i put on their (linear) disutility of deforestation in their homeland, capturing the citizens' "cultural cost" of deforestation or intrinsic preference for the forest of their homeland.

Citizens of group j receive total wage and rental income, they bear the cultural cost of deforestation and they pay the lump sum tax. The utility of one of these citizens is:

$$u^j(D^j) = w\frac{L^j}{\pi^j} + r\frac{D^j}{\pi^j} - \theta^j D^j - \tau. \tag{2}$$

We also assume that political institutions are relatively weak, and therefore that the active support of the president's coethnics is necessary for him to stay in power. As in Padro-i-Miquel (2007), we assume that a president who receives the support of his ethnic group stays in power with probability $\bar{\gamma}$. If his coethnics do not support him, the policy is not implemented and the president is ousted from power. In that case, the new president belongs to the same ethnic group with probability $1 > \overline{\gamma} \geq \underline{\gamma} > 0$.

We look for the Markov Perfect Equilibrium (MPE) of the game in which, in each period, the president chooses his policy vector (τ, e^i, e^j), then the citizens of each region decide whether or not to support their president. Denote by $V^i(P_j)$ a MPE continuation value of citizen of group i when the president is from group j. Group i chooses to support president P_i if:

$$u^i + \left(\overline{\gamma} - \underline{\gamma}\right)\left(V^i(P_i) - V^i(P_j)\right) \geq 0 \tag{3}$$

With these assumptions in hand, we can solve for the Markov Perfect Equilibrium of this game.

2.2 Equilibrium

2.2.1 Economy

It is useful to define the minimum unit-cost requirements of inputs in each sector-region: a_{kz} is the amount of input k used to produce one unit of output z at minimum cost given the technology and factor prices r and w in the absence of investment. We omit here expressing these coefficients as functions of the factor prices. Given the technology, output prices (p_1 and p_2) and factor endowments ($\bar{L}^j$ and D^j), the equilibrium of the model determines the rental price of factors (r and w), the output production levels (q_1^j and q_2^j), and the use of factors in each sector (D_1^j, D_2^j, L_1^j, and L_2^j).

In equilibrium, there are two sets of conditions to be met. First, firms must earn zero profits:

$$ra_{1D} + wa_{1L} = p_1 \tag{4}$$

$$ra_{2D} + wa_{2L} = p_2 \tag{5}$$

Second, the market for factors must clear:

$$q_1^j a_{1L} + q_2^j a_{2L} = L^j \tag{6}$$

$$q_1^j a_{1D} + q_2^j a_{2D} = D^j \tag{7}$$

Sector 1 being more land-intensive than sector 2, we must have:

$$\frac{a_{1D}}{a_{2D}} > \frac{a_{1L}}{a_{2L}} \tag{8}$$

The following result shows how forest protection impacts output in each sector of the economy.

Lemma 1 (Dal Bo and Dal Bo, 2011): *If there is an equilibrium without specialization in the production of one of the two outputs, when forest protection increases the output of the land-intensive sector (traditional agriculture/charcoal production) decreases while the output of the other sector (mining/intensive agriculture) grows.*

This Lemma is proved in Dal Bo and Dal Bo (2011) in a model where the input that is endogenous is not land as here but labor (part of it being used for appropriation), but the formal result is mathematically identical.

In the following, we assume that the economy is at an equilibrium without specialization.

2.2.2 Politics

The leader chooses the lump sum tax and the deforestation efforts that maximize his own utility (1) under the constraint to get support of his co-ethnics (3).

This leads us to our first result on the political equilibrium:

Lemma 2: *In the MPE, (a) the political support constraint (3) is binding, meaning that the president makes his co-ethnics indifferent between supporting or rejecting him; (b) the president makes no effort in the other region ($e^j = 0$).*

This leads us to our main result on the link between forest preference and deforestation:

Proposition 1: *In the MPE, if the president changes and belongs to a different ethnic group from that of his predecessor, (a) deforestation increases in the new president co-ethnics' region if their preference for forest is sufficiently weak ($\theta^i \leq r/\pi^i$); (b) this effect is weaker the stronger their preference for their forest; (c) this deforestation decreases if their preference for forest is sufficiently strong ($\theta^i > r/\pi^i$).*

This result lead us to formulate predictions regarding African politics and deforestation patterns.

2.3 Predictions

In the empirical part of the paper, we estimate the effect of a change of leader, with the new leader valuing forest differently from their predecessor.

1. *Deforestation in the region of a (new) president's co-ethnics increases if the ethnic group's pro-forest preference is sufficiently weak, this effect being smaller the stronger this preference.*

2. *Deforestation decreases if the ethnic group's intrinsic preference for their forest is sufficiently strong.*

3. *Production in the land-intensive sector follows the same pattern as deforestation, while production in the other sector follows the opposite pattern.*

3 Data description

Testing predictions 1 and 2 above requires data or proxies for (i) deforestation, (ii) ethnic groups' preferences for forests, and (iii) leaders' ethnicity. To test prediction 3, we additionally require measures of economic activity across different sectors that differ in land intensity. In this section, we present our main data sources and the variables included as controls in our estimations.

Forests in African folklore. As mentioned in the introduction, the environment and nature are central to many African traditional religions and cultural identities (Gottlieb, 2006, Mbiti, 1990). In traditional African cosmology, the natural world is typically connected with the divine, and therefore protected by religious beliefs and culture, passed on across generations through stories, myths and tales. Forests, in this context, are often considered as holy, sacred places, hosts of ancestors, spirits, or associated with fertility (Amanze, 2023). In southern Africa, for instance, the Chewa people use forests to host graveyards and ancestors' spirits (Dudley et al., 2010; Amanze, 2023). In Eastern Africa, the Maasai of Kenya consider them as holy, home of initiation rites and host of the Enkai, their supreme being. In western African, for the Fon and other ethnic groups traditionally adherent of Vodun beliefs, forests are thought of as a sacred place, the natural boundary between the living and the spirit world (Deopa and Rinaldo, 2024). Other examples include the Shona culture in Zimbabwe, the Batwa in central Africa, or the Yoruba in West Africa. Because of this connection between the human and the spiritual world, the environment becomes an entity that must be preserved. African folktales contain a knowledge system that often includes sustainable resource management practices (Thompson et al., 2024).

We measure the environmental culture at the ethnic group level, using information on folklore from Michalopoulos and Xue (2021). Their data contains a catalog of oral traditions based on the work by Berezkin (2015). The folklore data is split along various "motifs", i.e. "images, episodes or structured elements found in two or more texts". Michalopoulos and Xue (2021) match the groups present in Berezkin with the Ethnographic Atlas (Murdock, 1967), which we take as our unit of analysis. We construct different indicators of folklore to capture the importance of forests for the ethnic group. Our baseline measure defines a motif as forest related if it contains the world "forest" or "tree" in its description, as it appears in Michalopoulos and Xue (2021). Alternatively we use a more restrictive definition where "motifs" are defined as forest related if their *title* contains the terms "forest" or "tree". Appendix Table A.1 provides illustrative examples. We also compute the total number of motifs per ethnic group, which will be used as a control variable.

Additionally, we assemble several other folklore variables using a similar methodology and words like "production", "growth", "hunger" or "subsistence". These are used in robustness exercises as alternative components of culture which may affect deforestation and correlate with forest-related culture.

Definition of ethnic groups. An important component of the analysis is to spatially link the ethnic groups defined in Michalopoulos and Xue (2021) with the boundaries of ethnic groups provided in Murdock's Ethnic Atlas (Murdock, 1967). To implement this matching, we follow the strategy developed by Giuliano and Nunn (2018), which allows us to identify the location of 363 groups with a well-defined location of ethnic homeland borders.

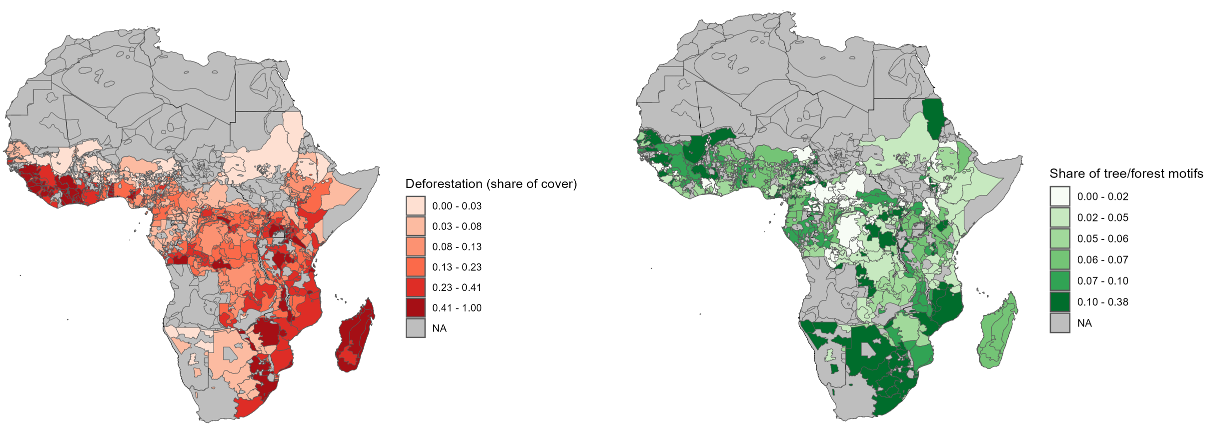
Deforestation. We rely on annual tree cover loss data from Landsat imagery (Hansen et al., 2013), which identify deforestation at the pixel level. The data span 2001-2021 and are mapped at a 30-meter resolution, using 2000 as the baseline year. Following Berman et al. (2023), we define forested pixels as those with canopy cover above 50% in 2000. Our deforestation measure aggregates, for each ethnic homeland e in country i at year t, the number of pixels (converted to hectares) classified as forest lost. Note that this dataset captures deforestation, but not forest degradation, which has become a major concern in tropical regions such as the Brazilian Amazon (Matricardi et al., 2020; Vancutsem et al., 2021). It also does not account for forest regrowth. To capture reforestation, we rely on biophysical indicators of terrestrial vegetation (Zang et al., 2025).

Political leaders. Data on political leaders comes from the African Cabinet and Political Elite Data Project (ACDEP), version 2 (Raleigh and Shephard, 2020). The ACDEP data contains information on leaders' and cabinet composition, including names and ethnic origin. Ethnic group classification, however, does not directly map with the Ethnographic Atlas (henceforth EA) classification, or with other standard datasets. Around 35% of the groups directly match. For the rest of the groups, we manually match each ACDEP group to (possibly multiple) ethnic groups of the EA, using documented online sources. In a few cases, a given EA group corresponds to several potential ACDEP groups – we do not consider these homelands. Overall, we are able to match the ACDEP ethnicity of 90% of the leaders with the EA.

Economic activity. We collect data on aid projects from GODAD (Bomprezzi et al., 2025), which we classify into broad types – environmental, agriculture, mining, land saving. For each country $\times$ ethnic homeland and year, we also add crop-specific information on agricultural yields from PANGAEA (Iizumi and Sakai, 2020), and on nighttime lights (Li and Zhou, 2017).

Other data. We gather several additional variables which we use as robustness. First, we add data on ethnic group characteristics (specialization, domestic organization) from the Ethnographic Atlas. Second, from the Afrobarometer[6], we compute, at the ethnic-group level, the share of individuals declaring an African Traditional Religion as their religion. We also collect data on reforestation (Zang et al., 2025) and protected areas (Pro, 2025).

Figure 1: Cumulative deforestation and forest-related culture by ethnic homeland



(a) Share of cumulative deforestation

Notes: Deforestation in homelands with less than 10% initial forest cover is set to zero.

(b) Forest culture intensity

Notes: Relative forest/tree preference, own definition based on motif descriptions.

Sample. Our final sample includes 29 countries and 568 ethnic homelands $\times$ countries, at the yearly level, over the 2001-2021 period. Figure 1 displays cumulative deforestation over the entire period by ethnic homeland alongside the share of forest-related motifs in total folklore, for the countries in our sample. The highest shares appear in western and southern Africa, though substantial within-region variation is also observed.

Table 1 contains descriptive statistics on our final sample for the main variables (Table A.2 in the appendix contains statistics on the other variables used in our analysis). Annual forest loss represents around 0.1% of initial forest cover. There are on average 3.79 forest-related motifs per ethnic group, i.e. 7% of the total number of motifs (2%

[6] https://www.afrobarometer.org/

when using the most restrictive definition). Homeland areas vary substantially, ranging from small homelands of less than 2,000 km^2 (first quartile) to large ones exceeding 20,000 km^2 (third quartile). In a given year, 5% of homelands correspond to the ethnic group of the national leader. 10% of the homelands are that of the leader at some point over the period, and 8% of the homelands exhibit leader's variability.[7]

Table 1: Summary statistics

	N	Mean	S.D.	1^{st} Quartile	Median	3^{rd} Quartile
	count	mean	sd	p25	p50	p75
Annual Forest loss (‰)	10614	1.14	4.43	0.06	0.29	0.88
Forest culture (baseline)	10614	3.79	2.87	1.00	4.00	5.00
Forest culture (alternative)	10614	0.90	1.14	0.00	1.00	1.00
Rel. Forest culture (baseline)	10614	0.07	0.05	0.04	0.06	0.08
Rel. Forest culture (alternative)	10614	0.02	0.02	0.00	0.01	0.03
Leader is of ethnic group	10614	0.05	0.21	0.00	0.00	0.00

Notes: Statistics are computed on our final sample, i.e. on the sample used in the estimations, for which all variables are non-missing. Unit of observation: ethnic homeland × country × year, over the period 2001-2021. Deforestation computed from Hansen et al. (2013), forest folklore from Michalopoulos and Xue (2021), and leader's ethnicity from Raleigh and Shephard (2020).

4 Empirical strategy and baseline results

4.1 Empirical strategy

We estimate whether deforestation varies in ethnic homelands e of national leaders in country i and year t, particularly when those leaders belong to groups whose cultural traditions assign symbolic or spiritual significance to forests. We estimate the following specification:

$$\text{Deforest}_{e,i,t} = \alpha \text{Leader}_{e,i,t} + \beta \text{Leader}_{e,i,t} \times \text{Culture}_e + \mathbf{D}_{i,t} + \mathbf{D}_{e,i} + \omega \mathbf{X}'_{e,i,t} + \varepsilon_{e,i,t} \quad (9)$$

where $\text{Deforest}_{e,i,t}$ denotes forest loss (in hectares) during year t within the ethnic homeland e located in country i. Culture_e measures the salience of forest-related culture in ethnic group e and $\text{Leader}_{e,i,t}$ is a binary indicator equal to one if the national leader of country i belongs to ethnic group e at the beginning of period t. The estimated coefficient $\widehat{\alpha}$ represents the average effect of "ethnic favoritism" on deforestation, namely whether leaders tend to deforest differently in their own ethnic homelands. Our main coefficient of interest, $\widehat{\beta}$, measures how this effect varies with the

[7] That is, they become the leader's homeland or cease to be the leader's homeland at some point over the period.

salience of forest-related culture in the ethnic group. Our estimations include country-by-year fixed effects ($\mathbf{D}_{i,t}$), which capture country-wide changes affecting all ethnic groups in a given year, as well as country-by-ethnic group fixed effects ($\mathbf{D}_{e,i}$), which control for time-invariant characteristics of each ethnic group within a country potentially that may affect deforestation level (e.g., group size, homeland area, economic specialization). This specification implies that identification comes from within-country-year variation across ethnic groups.

The inclusion of country-by-ethnic group fixed effects accounts for time-invariant characteristics that may correlate with Culture_e. However, it does not control for the possibility that such characteristics may interact differently with the leader variable ($\text{Leader}_{e,i,t}$). To address this, we include a set of ethnic group characteristics interacted with the leader variable ($\mathbf{X}'_{e,i,t}$). In our baseline specification, these controls include: the total number of folklore motifs; forest cover in 2000; the group's dependence on hunting and gathering, agriculture, pastoralism, and fishing; agricultural intensity; and indicators for the group's domestic organization (e.g. monogamous, polygynous etc., from the Ethnographic Atlas). In robustness checks, we further control for homeland population and total land area.[8]

Given the count nature of the dependent variable and the high share of zeros, we estimate equation (9) using a Poisson pseudo-maximum likelihood (PPML) estimator. Standard errors are clustered at the ethnic group-by-country level. In a sensitivity exercise, we also estimate the model using OLS, which accounts for spatially correlated standard errors (Conley, 1999), and distinguishes between the extensive and intensive margins of deforestation, namely the probability of observing positive deforestation and its (log) magnitude.

Equation (9) assumes that, conditional on fixed effects and other controls, changes in leaders and deforestation levels are not co-determined by unobserved variables, and that leaders' changes are not the result of deforestation patterns. Such reverse causality is unlikely, we believe, given our focus on the ethnic group level. Yet, we propose an alternative empirical strategy that focuses on the subset of narrowly elected leaders, i.e. leaders (i) elected and (ii) who won by a margin lower than 5%.[9] Alternatively, we conduct difference-in-difference estimations that are robust to heterogeneous and dynamic treatment effects (de Chaisemartin and D'Haultfoeuille, 2024) and allow us to test for and to rule out the presence of pre-trends. We also conduct a series of robustness checks to verify that our results are not driven by particular measures of culture, leaders' characteristics, individual observations or sample composition, nor by specific estimation or inference methods. Finally, we propose an altogether different method-

[8] Reassuringly, we show that our measure of the salience of forest-related culture exhibits little correlation with a large set of observable characteristics (Table A.3).

[9] See for instance Lee et al. (2004), Meyersson (2014), Klasnja and Titiunik (2017) or Novaes (2018).

ology, applying a Regression Discontinuity Design (RDD) to homelands split across two different countries. Section 5 describes this alternative methodology, and provides a detailed discussion of all the sensitivity analyses.

4.2 The impact of culture on deforestation: baseline results

Table 2 reports estimates of the effect of a change in national leadership and its interaction with the leader's ethnic group's salience of forest-related culture. We begin by testing whether ethnic favoritism affects deforestation (column 1). In this baseline specification, we do not detect any significant effect of leader turnover on deforestation in the leader's ethnic homeland. However, once we introduce the salience of forest-related culture of the leader's ethnic group, strong heterogeneity emerges (column 2). Specifically, the rise to power of a leader from an ethnic group with no forest-related culture is associated with a 104% increase in forest loss in their homeland, relative to non-coethnic groups.[10] By contrast, when the leader's ethnic group exhibits the average level of forest-related cultural salience (3.79 forest-related motifs), the increase in deforestation is limited to 25%. To examine whether the effect can reverse, we trichotomize the culture variable. In column (3), we consider separately ethnic groups above and below the sample median (of the groups that have a positive value), as well as groups where no forest culture is detected. We find that the arrival to power of a leader from a high-forest culture group leads to a 35% reduction in deforestation in their ethnic homeland, whereas for leaders originating from group where no forest-related culture is recorded, deforestation roughly doubles (relative to groups not represented in national leadership).

Interpreting our measure of forest culture as a proxy of ethnic groups preferences for forests, our main results are consistent with the first two theoretical predictions. Deforestation in the region of a president's co-ethnics increases when the ethnic group's preference for forest is sufficiently weak, but decrease if the ethnic group's preference for their forest is sufficiently strong.

4.3 Counterfactual exercises

To visualize the importance of culture for forest conservation, we perform the following two counterfactual exercises.

First, we use our baseline estimation (column 2 of Table 2) to predict the cumulative deforestation over the entire 2001-2021 period, for each country. We then recompute this deforestation level under two different counterfactual scenarios: (a) assigning to the leader's homeland the highest level of forest-culture in that country (i.e. the

[10]The marginal effect is computed as $\exp(0.716) - 1$, i.e. holding forest culture at zero.

Table 2: Main results

	(1)	(2)	(3)
Dep. var.		Forest loss (ha)	
Leader	-0.034	0.716***	
	(0.094)	(0.218)	
× Forest culture		-0.129***	
		(0.033)	
× No forest culture			0.656**
			(0.320)
× Low forest culture			0.309**
			(0.151)
× High forest culture			-0.437**
			(0.173)
N	10614	10614	10614
Country×Homeland FE		Yes	
Country×year FE		Yes	
Baseline controls		Yes	

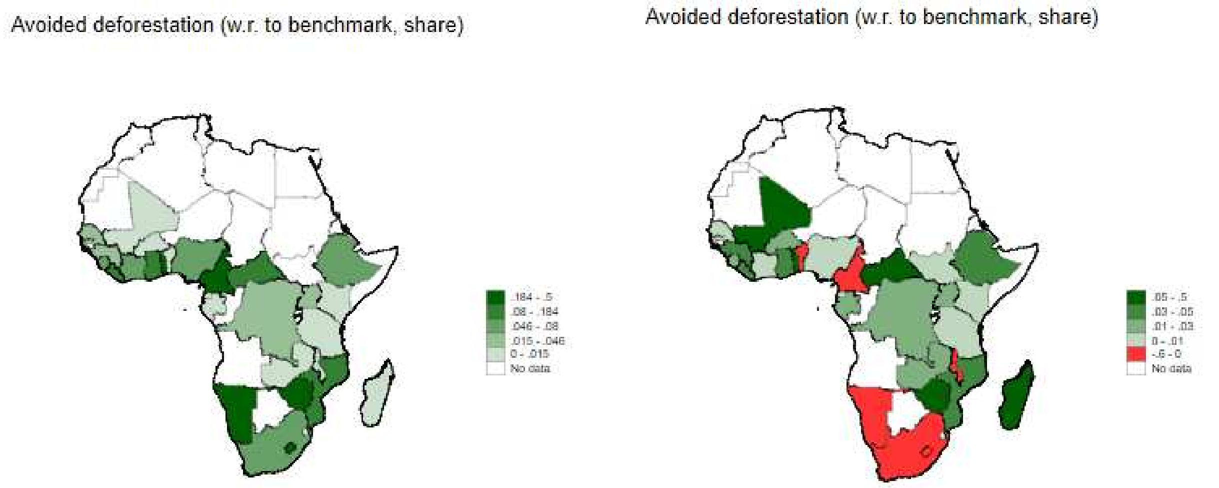
Notes: * significant at 10%; ** significant at 5%; *** significant at 1%. The unit of observation is the ethnic homeland × country × year, over the 2001-2021 period. PPML estimations in all estimations. Standard errors clustered at the at the ethnic-group × country level. The dependent variable is forest loss (in hectares) at the ethnic homeland × country × year level (Hansen et al., 2013). Leader is a variable taking the value 1 if the country's leader is of the same ethnicity as the group. The culture variable is the number of motifs which description includes the words "forest" or "tree" (Michalopoulos and Xue, 2021). High and low culture denote above and below sample median forest-related culture (of the groups that have a positive value), and "No culture" groups where no forest-related culture is recorded. Baseline controls include: total number of motifs (Michalopoulos and Xue, 2021), forest cover in 2000 (Hansen et al., 2013), ethnic group's share of subsistence from hunting and gathering, agriculture, pastoralism, and fishing, ethnic group's intensity of agriculture, and dummies for the domestic organization of the ethnic group (monogamous, polygynous, etc., from the Ethnographic Atlas). All baseline controls are interacted with the leader variable.

leader's homeland remains the same but its culture is more forest friendly); or (b) assigning leadership to the ethnic group with the highest level of forest-culture in that country (i.e., culture remains the same across homelands but the leader now comes from a more forest friendly homeland). Finally, we compare these counterfactual deforestation levels to the benchmark one. The results are shown in Figure 2.

In scenario (a), a total of 1.322 million hectares of forest loss are avoided, out of 29.623 million hectares of total forest loss in the sample. At the country level, avoided deforestation represents less than 1.5% in several countries–both in West Africa (Mali, Burkina Faso, and Benin) and East Africa (Kenya, Tanzania, Zambia, Malawi, and Madagascar)–ranging from 0 hectares in Kenya and Burkina Faso to 12,000 hectares in Zambia. These relatively modest effects are explained by the fact that these countries have largely been governed by leaders with relatively high levels of forest culture.[11]

[11] For instance, Zambia has been governed by leaders from the Bemba, Lamba, and Chewa ethnic groups, whose forest culture levels are close to the national maximum. The number of forest motifs is 4 for both Bemba and Lamba, and 5 for Chewa, while the group with the highest forest culture, the Pltonga, has 6 forest motifs.

Figure 2: Counterfactual exercise



(a) Counterfectual: leaders adopt the highest forest culture in their country

(b) Counterfactual: leadership assigned to the ethnic group with the highest forest culture in each country

This figure shows the percentage of avoided total deforestation (over the period and at the country level) under a the counterfactual scenario compared to benchmark total deforestation. The benchmark is the prediction of column 2, Table 2, using actual data, aggregated across years and homelands within countries. The counterfactual in figure (a) is is the prediction of column 2, Table 2, replacing forest culture level by the highest level of the country, then aggregated across years and homelands within countries. The counterfactual in figure (b) is is the prediction of column 2, Table 2, replacing the leader variable by 0, except for the homeland with the highest level of forest culture of the country, for which it is replaced with 1, then aggregated across years and homelands within countries.

In contrast, several other countries–particularly in Central Africa (Cameroon and the Central African Republic), West Africa (Liberia, Ghana, and Togo), and East Africa (Zambia and Mozambique)–could have substantially reduced deforestation if their leaders had possessed the highest possible levels of forest culture. In these cases, at least 8% of national forest loss could have been avoided, corresponding to 6,000 hectares in Togo and up to 226,000 hectares in Cameroon. This is because these countries have historically been led by ethnic groups with relatively low forest culture, leaving significant room for improvement had their leaders exhibited stronger forest culture.

In scenario (b), a total of 1.343 million hectares of forest loss are avoided compared to observed levels. As in scenario (a), deforestation declines overall due to the higher level of forest culture of the hypothetical leaders. This scenario (b) notably reduces deforestation by more than 3% in several countries–such as the Central African Republic, Zambia, Madagascar, Mali, and Ethiopia–corresponding to 67 hectares avoided in Mali and up to 1 million hectares avoided in Madagascar. However, in some countries, this scenario results in higher deforestation than actually observed. This occurs because leaders prioritize forest protection within their own homelands. This pattern is seen in Benin, Cameroon, Namibia, South Africa, Lesotho, and Malawi, where forest loss increases–ranging from an additional 8 hectares in Benin to 203,000 hectares in South Africa. In these countries, the homelands of the ethnic groups with the strongest forest culture contain relatively little forest compared to those of the ethnic groups that were actually in power.[12] As a result, if these high-forest-culture groups had held power, they would have implemented stronger conservation efforts over smaller forest areas–paradoxically leading to greater overall deforestation compared to the observed outcomes.

5 Dynamics and robustness

5.1 Dynamic effects

Having established that greater salience of forest-related culture in the leader's ethnic group reduces their propensity to deforest their homelands, we next explore the temporal dynamics of this effect using a difference-in-difference estimator robust to dynamic and heterogeneous effects. This notably allows us to check for the absence of parallel pre-trends in deforestation patterns between the leaders' groups and the other groups.

To capture heterogeneity, we split the sample into two groups based on the median level of forest culture: ethnic groups with above-median and below-median forest culture. For each group, we estimate the dynamic effect of the accession to power of a co-ethnic national leader on deforestation in the group's homeland, relative to a control group made of ethnic groups who had not previously held the position of head of government (during the sample period). We focus on a symmetric window spanning six years before and after each national leader's accession[13] and estimate the following equation:

$$\ln \text{Deforest}_{e,i,t} = \sum_{l=-6, l\neq 0}^{+6} \beta_l \mathbb{1}_{[\text{Leader}_{e,i,t} - \text{Leader}_{e,i,t-1} = 1]} \text{Leader}_{e,i,t+l-1} + \mathbf{FE}_{i,t} + \mathbf{FE}_{e,i} + \varepsilon_{e,i,t}, \tag{10}$$

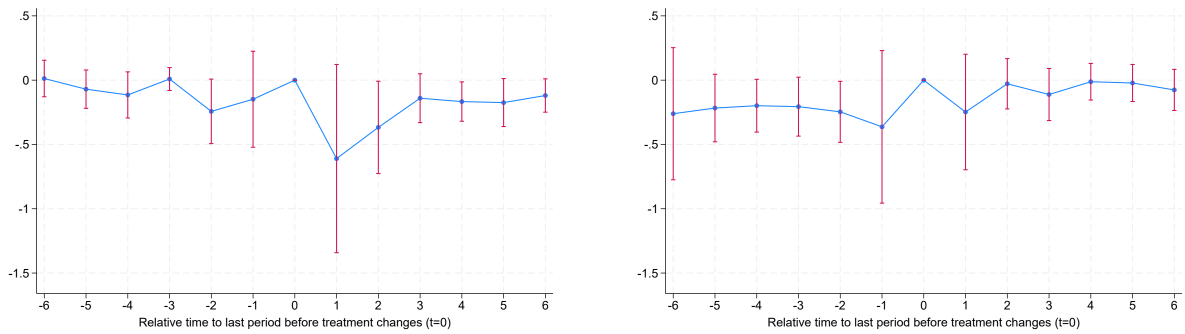
where $\ln \text{Deforest}_{e,i,t}$ is the log of the forest loss observed during year t in ethnic homeland e and country i, $\text{Leader}_{e,i,t+l-1}$ is a binary treatment variable and $\mathbb{1}_{[\text{Leader}_{e,i,t} - \text{Leader}_{e,i,t-1} = 1]}$ is a dummy variable equals to 1 when group e accesses power in country i during

[12] The ratio of forest cover in the homeland of the ethnic group with the highest forest culture to that of the ethnic group in power in 2000 averages below 30% in these countries. In Cameroon, South Africa, and Lesotho, this difference mainly reflects the smaller size of the homelands, whereas in Benin, Namibia and Malawi, the homeland of the ethnic group with the highest forest culture is on average not smaller than that of the leader's group.

[13] In our sample, national leaders remain in office for an average of six years.

year t and zero when there is no change.[14] $\hat{\beta}_l$ is the estimated effect of "ethnic favoritism" on deforestation, i.e. captures whether leaders deforests more or less in her ethnic homeland ($l-1$ years after accession to power) compared to groups that have not held power in their country. We model the binary treatment variable $\text{Leader}_{e,i,t}$ as non-absorbing: the treatment switches on when a member of an ethnic group becomes national leader and switches off when that leader is removed from office and not replaced by another member of the same group. We estimate this effect using the method proposed by de Chaisemartin and D'Haultfoeuille (2024).

Figure 3: Dynamic Effects



(a) High forest culture **(b)** Low forest culture

Notes: these figures show the coefficients obtained when estimating equation (10), i.e. the dynamic effect of the accession to power of a co-ethnic national leader on deforestation in the group's homeland, relative to a control group made of ethnic groups who had not previously held the position of head of government (during the sample period). The sample is split into two groups based on the median level of forest culture intensity : ethnic groups with above-median (figure a) and below-median (figure b) forest culture. Standard errors clustered at the at the ethnic-group × country level. The unit of observation is the ethnic homeland × country, over the 2001-2021 period. The dependent variable is (the log of) total forest loss from Hansen (2013). The forest culture variable is the number of motifs which description includes the words "forest" or "tree", from Michalopoulos and Xu (2021) data. We use the estimator of de Chaisemartin and D'Haultfoeuille (2024). See Table A.4, columns (1) and (2), for average post-treatment coefficients, standard errors and p-value from a joint significance test of the placebos.

Figure 3 presents our estimates, with average coefficients reported in Appendix Table A.4, columns (1) and (2). Columns (3) and (4) further restrict the control group to ethnic groups that never held the head-of-government position during our sample period. We find that the accession of national leaders from ethnic groups with high levels of forest-related culture reduces deforestation in their homelands (Figure 3.a and Table A.4, odd numbered columns). Our estimates indicate that forest loss is reduced by 50% in the leaders' homelands of these groups compared to the homelands of the control group following their accession to power. This reduction appears to occur primarily within the first two years after accession. Crucially, we find no evidence of significant effects in the years preceding the leader's accession, supporting the validity of the parallel trends assumption. In contrast, we do not detect any effect for leaders whose ethnic group has low levels of forest culture (Figure 3.b and Table A.4, even

[14]It is -1 when group e looses power in country i during year t.

numbered columns). One limitation, which is apparent in table Table A.4, is that with this estimator the inclusion of country-by-year fixed effects limits drastically the size of the sample. In columns (5) to (8) we replace these by year fixed effects. Our results are largely unchanged. Overall, these findings align with our theoretical predictions: the effect of national leadership on deforestation is conditional on the cultural traits of the leader's ethnic group, in particular their forest-related culture. Leaders from groups with stronger forest culture systematically reduce deforestation in their ethnic homelands.

5.2 Additional Robustness

We conduct a wide range of robustness checks on our baseline specification (Table 2, column 2). First, we further alleviates concerns related to reverse causality or anticipation effects by focusing on close elections, under the assumption that these are harder to predict. The small number of elections points of our sample makes standard winning margin definitions from the literature inapplicable. We therefore restrict the sample to leaders elected with a vote margin below 5%. Despite the drastic reduction in sample size, our main coefficient remains significant (Table 3, column 1).

As the PPML estimator captures both extensive and intensive margin effects, we disentangle these dimensions in columns (2) and (4). Our findings indicate that the results are primarily driven by the intensive margin, rather than by the emergence of new deforestation fronts. Given the high spatial resolution of the deforestation patterns in columns (3) and (5) we allow the error term to be spatially correlated and auto-correlated. More precisely, we apply a spatial HAC correction to our standard errors, allowing for both cross-sectional spatial correlation and location-specific serial correlation, following the method developed by Conley (1999). As in Berman et al. (2021), we impose no constraint on the temporal decay for the Newey-West/Bartlett kernel that weights serial correlation across time periods. The horizon at which serial correlation is assumed to vanish can be infinite (i.e., 100,000 years). In the spatial dimension we retain a radius of 500 km for the spatial kernel.

In many African countries, political leaders maintain strong influence over their birth regions, shaping local policy and resource allocation (Hodler and Raschky, 2014; Burgess et al., 2015; Couttenier et al., 2025). In our sample, 45% of the 110 leaders were born outside their ethnic homeland. Beyond the robustness of our main result, an important question is whether leaders exert a similar influence in their region of birth when it does not coincide with their ethnic homeland. Specifically, we examine whether the appointment of a leader affects not only the ethnic homeland of their ethnic group, but also the ethnic homeland in which they were born, when the two do not coincide. This allows us to assess whether birthplace ties generate effects comparable to those driven by ethnic affiliation. We extend our baseline specification by adding a dummy variable equal to one if the leader was born in the ethnic homeland, together with its interaction with the salience of the forest culture of the leader (column 6). The effects of birthplace and homeland share the same signs, but birthplace effects are smaller in magnitude and statistically insignificant, whereas homeland effects remain stable relative to our baseline estimates.

Including country-by-ethnic homeland fixed effects allows us to control for the size of ethnic groups, which varies substantially across Africa. However, this approach does not account for the possibility that the effects of a leader's rise to power might differ depending on the area or population size of the ethnic homeland. We therefore additionally control for both population size and total area of the ethnic homeland, interacting each with the leader variable (column 7). Alternatively, to account for differences in the size of ethnic homelands, we implement two complementary exercises. First, to address the concern that small homelands with quantitatively negligible levels of deforestation may be driving our results, we exclude these observations from the sample (column 8). Second, we re-estimate the regressions by weighting observations by the total area of the ethnic homeland (column 9). The results remain robust throughout.

Finally, in column (10) we consider an alternative, more restrictive definition of forest-related culture, which counts the number of motifs containing "forest" or "tree" in their titles (instead of description). Again, the results remain consistent with our baseline estimates.

Table 3: Robustness of the main results

	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)
Dep. var.	Forest loss (ha)	$\mathbb{1}_{\text{Deforest}_{e,i,t}>0}$			—————— Forest loss (ha) ——————					
Robustness	Close elections	Extensive margin	Conley s.e.	Intensive margin	Conley s.e.	Birth place	Additional controls	Drop small homelands	Weights	Alternative culture
Leader (ethnic group)	0.211	0.015	0.006	0.441*	0.441***	0.590**	0.817***	0.716***	1.122***	0.591***
	(0.318)	(0.040)	(0.028)	(0.237)	(0.154)	(0.239)	(0.258)	(0.218)	(0.248)	(0.168)
× Forest culture	-0.334**	0.001	0.001	-0.105**	-0.105***	-0.095**	-0.130***	-0.129***	-0.178***	-0.319***
	(0.159)	(0.008)	(0.005)	(0.047)	(0.029)	(0.044)	(0.034)	(0.033)	(0.037)	(0.074)
Leader (birth place)						0.145				
						(0.119)				
× Forest culture						-0.045				
						(0.034)				
N	526	10614	10509	8875	8930	10614	10509	9741	10509	10614
Country×Homeland FE					Yes					
Country×year FE					Yes					
Baseline controls					Yes					

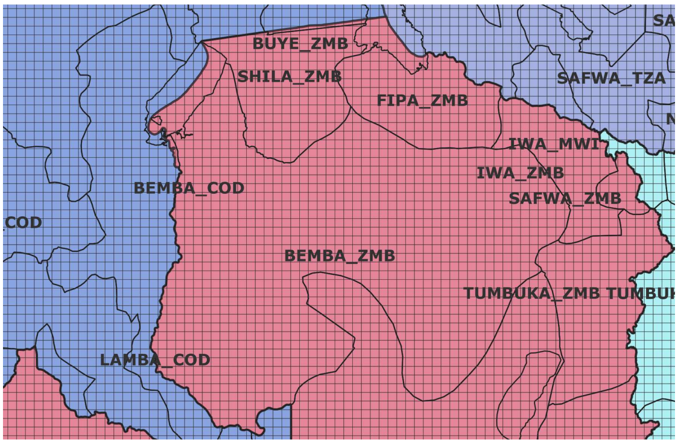
Notes: * significant at 10%; ** significant at 5%; *** significant at 1%. The unit of observation is the ethnic homeland × country, over the 2001-2021 period. PPML estimations in all estimations but columns (2) to (5), where OLS is used. Standard errors clustered at the ethnic-group × country level, except in (3) and (5), where we allow for spatial correlation within a 500km radius around the homeland centroid (Conley, 1999). The dependent variable is forest loss (in hectares) at the ethnic homeland × country × year level (Hansen et al., 2013) in all columns but (2) and (3), where it is a dummy denoting positive deforestation, and (4) and (5), where it is the log of (positive) forest loss. The forest culture variable is the number of motifs which description includes the words "forest" or "tree", from Michalopoulos and Xue (2021) data, except in column (10) where we use a stricter definition based on the motif's title. Leader (ethnic group) is a variable taking the value 1 if the country's leader is of the same ethnicity as the group. Leader (birth place) is a variable taking the value 1 if the country's leader is born in that homeland. Controls include: total number of motifs (Michalopoulos and Xue, 2021), forest cover in 2000 (from Hansen), ethnic group's share of subsistence from hunting and gathering, agriculture, pastoralism, and fishing, ethnic group's intensity of agriculture, and dummies for the domestic organization of the ethnic group (monogamous, polygynous, etc., from the Ethnographic Atlas). All control variables are interacted with the leader variable. Column (2) is restricted to leaders elected with a victory margin lower than 5%. Column (7) includes homeland average population, homeland total area as additional controls (interacted with leader's dummy). Column (8) drops homelands smaller than 100 square kilometers. Column (9) weights the estimations by area.

5.3 Regression Discontinuity Design

One potential limitation of the previous analysis is that leader's homelands may differ from others in dimensions that correlate with deforestation patterns. In this section we pursue an alternative strategy to estimate the effect of forest-related culture on local deforestation. We concentrate on homelands spanning several countries, and use a RDD design to estimate the effect of political leadership on deforestation around the countries borders. To gather spatial variation, we divide Africa in cells of 0.1 degree of latitude and longitude (roughly 11 by 11 km at the equator) and recompute yearly deforestation at this level of aggregation. We then calculate the shortest distance between each cell and the nearest country border. We only keep in the sample the cells belonging to homelands which are split across exactly two countries, and which are "treated" at least once over the period – that is at least one side of the homeland is that of the coutry's leader at least once over the period, as well as cells with a positive forest cover in 2000.

Map 4 above illustrates our strategy. Consider the Bemba homeland, occupying a territory spanning both DRC (blue area denoted by COD on the map, approx. 400 cells)

Figure 4: Cell-level empirical design



and Zambia (red area on the map denoted by ZMB, approx. 1200 cells). DRC cells are never treated, because the Bemba group is never in power during the period in DRC. In Zambia, on the other hand, it is in power in the periods 2000-2001 and 2012-2014. Our objective is to compare the cells on each side of the DRC-Zambia border, when the treatment kicks in in Zambia (and similarly for other ethnic groups spanning several countries). We will also estimate that how that effect varies with the level of forest-related culture of the group.

Denote a cell by k, located in an ethnic homeland e and a country i, and t the year. Further denote by $Dist_k$ the distance to the nearest country border within the homeland.[15] We estimate a specification of the form :

$$\text{Deforest}_{k,e,i,t} = \beta T_{k,t} + f_0(\text{Dist}_k, \gamma_0).[T_{k,t} = 0] + f_1(\text{Dist}_k, \gamma_1).[T_{k,t} = 1] + \mathbf{D}_{e,i} + \mathbf{D}_{e,t} + \varepsilon_{k,e,i,t} \quad (11)$$

$T_{k,t}$ is our treatment dummy it equals 1 if cell k belongs to the homeland of the country's leader at time t. f_0 and f_1 are unknown functions with parameters γ_0 and γ_1, which control for the distance between the cell and the country's border on both sides (i.e. the running variable). We use a linear polynomial in our baseline (see Cattaneo et al., 2019; Gelman and Imbens, 2019). Following Cattaneo et al. (2019), we compute the optimal bandwidth using the MSE-minimizing procedure and we use a triangular weighting kernel. We control for homeland by country fixed effects $\mathbf{D}_{e,i}$ and for homeland by year $\mathbf{D}_{e,t}$. Our coefficient of interest is β, which captures the discontinuity in the average level of deforestation at the country border. Given the small number of ethnic homelands, we cluster standard errors at the ethnic group $\times$ year level. Finally,

[15] Some cells may be located closer to a country border which does not belong to the homeland. In our baseline estimations we only consider distance to the closest border *within the homeland*. In robustnes we keep only the cells which closest border is within the ethnic homeland.

given that our objective is not only to estimate leaders' effects but rather whether this effect varies depending on the salience of forest culture, we estimate (11) on different samples, defined according to the level of forest culture of ethnic group e.

Table 4: Regression Discontinuity Design results

	(1)	(2)	(3)	(4)	(5)	(6)
Dep. var.	Forest Loss (hectares)					
Sample	High forest culture			Low forest culture		
Donut	No	Yes	Yes	No	Yes	Yes
Closest country	No	No	Yes	No	No	Yes
Leader treatment	-10.065***	-11.874***	-11.779***	0.399	7.312**	7.317**
	(2.263)	(3.064)	(3.036)	(2.507)	(3.430)	(3.435)
Bandwidth (Kms)	69.14	67.65	64.20	59.88	54.14	53.69
Mean dep. var.	4.57	4.96	5.11	32.6	32.5	32.4
N	22974	19950	18732	33684	25851	24717
Fixed effects	Country × Homeland FE, Homeland × Year					

Notes: * significant at 10%; ** significant at 5%; *** significant at 1%. RDD estimations, with optimal bandwidths computed using the MSE-minimizing procedure following (Cattaneo et al., 2019). Regressions include a linear polynomial and a triangular weighting kernel. Standard errors clustered at the ethnic-group × year level. The unit of observation is the 0.1 × 0.1 degree cell, over the 2001-2021 period. The sample includes only ethnic homelands spanning exactly two countries, one of which is the homeland of the coutry's leader at least once over the period. Cell with zero initial forest cover are dropped. All estimations control for initial forest cover. Columns (2), (3), (5), and (6) drop cells located less than 10km of the border ("Donut"). Columns (3) and (6) further drop cells for which the closest country is not within the ethnic homeland. The dependent variable is total forest loss (in hectares) from Hansen (2013).

The results are shown in Table 4. Our baseline sample contains around 20,000 cells, located in 21 homelands spanning 21 different countries. The first three columns focus on homelands with above median forest culture values, and the last three on homelands with below median forest culture. Consistent with our previous results, we find that the leader treatment is negative, and statistically significant, in homelands characterized by a more salient forest culture. On the contrary, in cells belonging to homelands with a low forest culture, the leader treatment has a positive effect, statistically significant in columns (5) and (6). Removing the "donut hole", i.e. cells located within 10km of the border, to account for measurement error, or keeping only cells which closest country border is located with the homeland, leads to similar conclusions.

5.4 Other dimensions of culture, distances to leader, and the role of traditional religions

This subsection examines alternative explanations for our results and perform additional exercises to ensure that we are indeed identifying the effect of forest-related culture and its interaction with leaders' ethnicity.

Alternative cultural dimensions. We first consider other aspects of culture that may correlate with forest culture and influence deforestation patterns. Using the indices developed by Michalopoulos and Xue (2021), we capture the frequency of alternative motifs related to the environment (broadly defined), production, growth, hunger, and subsistence. The last three themes reflect the main drivers of deforestation in Africa: agricultural expansion and subsistence pressure (Masolele et al., 2024). In the context of our model, citizens of groups where production or growth motifs are more salient should care relatively more about income and less about forests, implying that leaders from such groups encourage greater deforestation in their homelands. The same logic applies to hunger or subsistence motifs.

Table 5 presents the results. In the odd-numbered columns, we replace our forest-culture index with each alternative measures of culture. In the even-numbered columns, we augment our main specification by including interaction terms between these alternative culture indices and the leader indicator. Environment-related culture is associated with lower deforestation in leaders' homelands (column 1), but the effect weakens and becomes statistically insignificant once the forest culture index of the leader's ethnic group is included in the regression (column 2). In contrast, motifs related to production, growth, hunger, and subsistence consistently amplify deforestation following a leader's accession to power (columns 3 to 10). Across all specifications, the coefficient on the leader's forest culture remains stable and quantitatively comparable to our baseline estimates.

Table 5: Other dimensions of culture

	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)
Dep. var.	Forest Loss									
Alt. culture	Environment		Production		Growth		Hunger		Subsistence	
Leader	0.089	0.710***	-0.448*	0.539*	-0.054	0.574***	-0.584**	0.341**	-0.413*	0.374**
	(0.134)	(0.212)	(0.231)	(0.279)	(0.212)	(0.181)	(0.267)	(0.169)	(0.240)	(0.150)
× Alt. culture	-0.210*	-0.034	0.522**	0.125	0.054	0.182*	0.178**	0.086	0.219*	0.130
	(0.112)	(0.058)	(0.226)	(0.171)	(0.126)	(0.100)	(0.085)	(0.059)	(0.116)	(0.092)
× Forest culture		-0.126***		-0.117***		-0.152***		-0.115***		-0.113***
		(0.031)		(0.032)		(0.036)		(0.026)		(0.023)
N	10614	10614	10614	10614	10614	10614	10614	10614	10614	10614
Country×Homeland FE	Yes									
Country×year FE	Yes									
Baseline controls	Yes									

Notes: * significant at 10%; ** significant at 5%; *** significant at 1%. PPML estimations. Standard errors clustered at the ethnic-group × country level. The unit of observation is the ethnic homeland × country, over the 2001-2021 period. The dependent variable is total forest loss (in hectares) from Hansen et al. (2013). The forest culture variable is the number of motifs which description includes the words "forest" or "tree", from Michalopoulos and Xue (2021) data. Other culture variables count the number of motifs coded by Michalopoulos and Xue (2021) for each categories. Leader is a variable taking the value 1 if the country's leader is of the same ethnicity as the group. Controls include: total number of motifs (from Michalopoulos and Xu), forest cover in 2000 (from Hansen), ethnic group's share of subsistence from hunting and gathering, agriculture, pastoralism, and fishing, ethnic group's intensity of agriculture, and dummies for the domestic organization of the ethnic group (monogamous, polygynous, etc., from the Ethnographic Atlas). All control variables are interacted with the leader variable.

Traditional religions. To further validate that we identify the effect of forest culture, we examine the role of African Traditional Religions, which form a central part of the cultural identity of many ethnic groups and often treat forests as sacred spaces (Deopa and Rinaldo, 2024). Because no comprehensive dataset records adherence to traditional religions at the ethnic level, we construct a new indicator using Rounds 3 to 6 of the Afrobarometer surveys, which report (i) respondent's self-reported ethnic group, (ii) whether they identify with a traditional religion, and (iii) the importance they attach to religion in their lives. Based on this information, we classify an ethnic homeland as associated with African Traditional Religions if at least one respondent from that group reports that traditional religion is important to them. We then assess whether the effect of the forest culture differs across ethnic groups with and without traditional religious representation. The results, shown in Appendix Table A.5, indicate that our main result is observed only among groups where traditional religions are practiced, confirming a close link between traditional belief systems and the salience of forests in cultural traditions.

Cultural, geographical, and political proximity. Finally, we consider alternative measures of distance between the ethnic group and the leader. It may be that leaders does not take into account the preferences of their own ethnic group, but rather those of groups that are culturally or geographically close to them. It may also be the case that what matters is not the leader but rather the representation of the ethnic group within government cabinets. In table A.6 in the appendix, we augment our baseline specification with interaction terms between the group's forest culture and three proximity measures: (i) cultural proximity, defined by a shared language; (ii) geographical proximity, defined by contiguity between homelands; and (iii) political proximity, measured as the share of cabinet members belonging to each ethnic group. Cultural proximity appears to matter as deforestation is lower in the homelands of culturally close groups when forests are salient in their culture (columns 1 and 4), while geographical and political proximity show no significant effects (columns 2 to 4). Importantly, our baseline interaction coefficient remain significant and stable across all specifications.

6 Policies and Economic Activity

Environmental policies. Standard deforestation measures capture only forest loss and omit forest gains, thus overlooking the potential contribution of effective environmental governance to forest regrowth. Moreover, they are silent on the role of conservation policies. Table 6 addresses these limitations by using alternative outcomes related to reforestation and forest protection.

We first consider three biophysical indicators of vegetation, Leaf Area Index (LAI), Fraction of Photosynthetically Active Radiation (FPAR), and Above-Ground Biomass (AGB), as dependent variables in our baseline specification (9).[16] Columns (1)-(3) of Table 6 show a consistent pattern: leaders from ethnic groups without forest-related culture are associated with lower reforestation in their homelands, while this effect is mitigated or reversed when the leader's group places greater cultural value on forests. Column (4) uses net tree-cover change, which captures both forest loss and regrowth. The results remain broadly consistent, although the interaction between leadership and cultural salience is not statistically significant.

Table 6: Reforestation, protected areas, land use

	(1)	(2)	(3)	(4)	(5)	(6)
Dep. var.	Reforestation			Tree cover	Protected areas	
Indicator	LAI	FPAR	AGB		Binary	Area
Leader	-0.188	-2.027***	-1.177***	-0.138	-0.012	-363.030
	(0.679)	(0.567)	(0.360)	(0.084)	(0.044)	(405.537)
× Forest culture	0.165	0.621***	0.405***	0.023	0.000	54.146
	(0.169)	(0.147)	(0.109)	(0.018)	(0.008)	(66.593)
N	1771	1771	1771	10965	11570	11570
Fixed effects	Country × Ethnic Group, Country × year					
Baseline controls	Yes	Yes	Yes	Yes	Yes	Yes

Notes: * significant at 10%; ** significant at 5%; *** significant at 1%. PPML estimations. Standard errors clustered at the ethnic-group × country level. The unit of observation is the ethnic homeland × country, over the 2001-2021 period (only the years 2005, 2010 and 2015 in cols 1 and 2). In columns (1) and (2) the dependent variable is an indicator of reforestation. LAI denotes the Leaf Area Index regrowth of forests following deforestation and FPAR denotes Fraction of Photosynthetical Active Radiation. In column (4) the dependent variable is the change in tree cover share. In columns (5) and (6) the dependent variable is an indicator of protected area: the probability of a new area in the homeland in column (5), and the effective new area covered in column (6). The forest culture variable is the number of motifs which description includes the words "forest" or "tree", from Michalopoulos and Xu (2021) data. Leader is a variable taking the value 1 if the country's leader is of the same ethnicity as the group. Controls include: share of homeland area covered by the reforestation data, total number of motifs (from Michalopoulos and Xu), forest cover in 2000 (from Hansen), ethnic group's share of subsistence from hunting and gathering, agriculture, pastoralism, and fishing, ethnic group's intensity of agriculture, and dummies for the domestic organization of the ethnic group (monogamous, polygynous, etc., from the Ethnographic Atlas). All control variable are interacted with the leader/distance/population share variables variables in the corresponding estimations. All estimations include interactions between year dummies and the leader dummies, and between year dummies and the culture variable.

Turning to policy outcomes, we examine whether leaders' cultural backgrounds affect the creation of protected areas in their homelands. Using (i) a binary indicator for the presence of at least one protected area and (ii) the total protected area within the homeland (columns 5-6), we find that leaders without forest-related culture appear

[16]The Leaf Area Index (LAI) represents the ratio between the green leaf area and the ground area in broadleaf canopies, or one-half of the total needle surface area and the ground area in coniferous canopies. A higher LAI indicates a greater leaf surface available to capture light, and therefore a higher potential for regrowth. The Fraction of Photosynthetically Active Radiation (FPAR) is the proportion of incoming solar radiation in the 400-700 nm range that is absorbed by green vegetation. A higher FPAR reflects a greater rate of energy absorption, indicating faster regrowth. Above-Ground Biomass (AGB), expressed in metric tonnes per hectare, quantifies the total mass of trees and serves as a measure of vegetation productivity.

less likely to expand protection, although estimates are imprecise and not significant at conventional levels.

Economic activity. Our model in Section 2 predicts that production in the land-intensive sector should mirror deforestation patterns, i.e. rising relatively less in the homelands of leaders from groups with stronger forest-related culture, while production in the other sector exhibits the opposite pattern. Because direct, time-varying, sector-specific measures of production are unavailable at the ethnic homeland level, we turn to alternative proxies and strategies that capture sectoral policy priorities.

We first focus on foreign aid projects, a key policy instrument in many African countries, where national leaders often exercise substantial discretion over the allocation of external assistance (Khilji and Zampelli, 1994). We use data on World Bank-funded aid projects, whose textual descriptions allow classification into thematic categories. Results are reported in Table 7.

Columns (1)-(3) reveal consistent patterns. Using all projects as a baseline, the probability that at least one project is located in the leader's homeland increases under leaders without forest-oriented culture, but this effect reverses for leaders whose ethnic groups attach greater symbolic importance to forests. When restricting the sample to environment-oriented projects, defined by sector names containing the word "environment" (column 2) or by environment-related keywords (column 3), projects are significantly less likely to be implemented in the homelands of leaders without forest culture. In columns (4) and (5), we extend the analysis using a prompt-based classification of project descriptions (via OpenAI's API) to identify initiatives focused on land saving (column 4) and environmental protection (column 5).[17] Consistent with our main findings, these projects are less prevalent in the homelands of leaders without forest-oriented culture, with effects attenuating or reversing for culturally forest-oriented groups.

Finally, columns (6) and (7) consider aid projects targeting agriculture and mining, respectively. Agricultural projects, typically aimed at raising yields through productivity-enhancing technologies such as the WAAPP, EAAPP, and APPSA programs[18] are more

[17]The following tailored prompt instructs the model to categorize the projects: *"You are an expert in environmental project analysis. Categorize the following project description into one of these categories by returning its corresponding number only: 1. Land saving: projects that involve policies or technologies aimed at land saving (reducing the land area required to produce goods or services for example.), 2. Environmental protection: Projects whose primary objective is forest conservation and environmental protection thanks to different intervention (e.g., establishment of protected areas, reforestation, combating illegal deforestation, ecosystem restoration, etc.) Other: Projects that do not fit into the above categories."*

[18]WAAPP refers to the West Africa Agricultural Productivity Program, EAAPP to the Eastern Africa Agricultural Productivity Program, and APPSA to the Agricultural Productivity Program for Southern Africa). See https://www.waapp-ppaao.org/en for more details about the WAAPP, https://www.asareca.org/eaap-project/ for EAAP, and https://www.ccardesa.org/agricultural-productivity-program-southern-africa-appsa for APPSA.

likely to be located in the homelands of leaders from ethnic groups with salient forest-related culture. Mining projects display similar but weaker patterns, with interaction terms statistically insignificant at conventional levels (p-value = 0.14, column 7).

Taken together, these results suggest that foreign aid does not only serve as a development tool, but also as a means through which leaders with forest-oriented culture promote forest preservation in their homelands. This interpretation aligns with our theoretical predictions: most agricultural aid projects target intensive rather than extensive agriculture, aiming to increase yields rather than expand cultivated land.

Table 7: Aid projects and economic activity

	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)
Dep. var.	New aid project							Other		
	All	Environmental Strict	Environmental Large	Land saving	Environ. protection	Agriculture	Mining	Yields	Δ Crop land	Nighttime lights
Leader	-0.032	-0.128**	-0.161**	-0.037***	-0.104**	-0.207***	-0.020	-2.267	0.093*	-0.175
	(0.084)	(0.051)	(0.064)	(0.014)	(0.050)	(0.062)	(0.028)	(1.570)	(0.057)	(0.326)
× Forest culture	0.010	0.025**	0.029**	0.007***	0.021**	0.044***	0.009	0.961**	-0.014	0.026
	(0.015)	(0.012)	(0.013)	(0.003)	(0.010)	(0.013)	(0.005)	(0.448)	(0.014)	(0.063)
N	11570	11570	11570	11570	11570	11570	11570	35664	10965	11460
Country×Homeland FE	Yes	Yes	Yes	Yes	Yes	Yes	Yes	No	Yes	Yes
Country×Homeland × crop FE	No	No	No	No	No	No	No	Yes	No	No
Country×year FE					Yes					
Baseline controls					Yes					

Notes: * significant at 10%; ** significant at 5%; *** significant at 1%. OLS estimations. Standard errors clustered at the ethnic-group × country level. The unit of observation is the ethnic homeland × country, over the 2001-2021 period, except in column 8 where it is ethnic homeland × country × crop. The dependent variable a dummy denoting at least one new aid project in the homeland that year. Subcategories: in column (2), projects which sector name contains the term "environment"; in column (3), projects which sector name contains the term "environment", or which description contains either the term "environment", " forest", "conservation", or "deforestation"; in columns (4) and (5), projects whose description is identified by ChatGPT 5 as land saving and environmental protection, respectively; in column (6), projects which sector name contains the term "agriculture"; in column (7), projects which sector name contains the term "mining" or "mineral". In column (8) the dependent variable is crop-specific yield; in column (9), change in crop land area, and in column (10), the intensity of nighttime luminosity. The forest culture variable is the number of motifs which description includes the words "forest" or "tree", from Michalopoulos and Xu (2021) data. Leader is a variable taking the value 1 if the country's leader is of the same ethnicity as the group. Controls include: total number of motifs (from Michalopoulos and Xu), forest cover in 2000 (from Hansen), ethnic group's share of subsistence from hunting and gathering, agriculture, pastoralism, and fishing, ethnic group's intensity of agriculture, and dummies for the domestic organization of the ethnic group (monogamous, polygynous, etc., from the Ethnographic Atlas). All control variables are interacted with the leader variables in the corresponding estimations.

We next examine whether leaders' cultural backgrounds are associated with broader economic outcomes. Consistent with our theoretical predictions, crop-specific yields for maize, rice, soybean, and wheat increase in the homelands of leaders from groups with stronger forest-related culture (column 8), while cropland area declines, although the latter effect is not statistically significant (column 9). These patterns indicate that such leaders favor agricultural intensification, raising productivity on existing land, rather than extensification through land expansion. Turning to aggregate economic activity, we find no evidence that nighttime luminosity responds to leaders' forest-related culture (column 10), suggesting that the pursuit of forest conservation does not come at the expense of overall economic performance.

7 Conclusion

We propose a new framework for studying how cultural values shape environmental policy and deforestation in Africa. Our analysis combines data on the environmental culture of ethnic groups, the ethnic affiliations of national leaders, and satellite-based measures of deforestation across 363 ethnic homelands in 29 countries between 2001 and 2021. This perspective complements existing research that emphasizes the reverse link, how environmental conditions shape cultural norms, by highlighting culture as a driver, not merely a reflection, of environmental outcomes.

We show that the cultural values embedded in leaders' ethnic backgrounds have measurable effects on environmental conservation. Using folklore-based measures of the salience of forests in ethnic culture, we find that deforestation rises in the homelands of leaders whose groups assign little symbolic or spiritual value to forests, and declines when leaders belong to groups with stronger forest-related culture. These effects are robust across specifications and operate through policy channels: leaders from forest-oriented cultures promote more reforestation and attract more environment-related projects, consistent with differences in conservation and land-use priorities.

Our findings reveal a new dimension of political favoritism. Beyond material transfers, leaders' decisions reflect the cultural values of their own groups, a form of cultural favoritism, that extends conventional models of ethnic politics and public good provision. More broadly, the results underscore that the foundations of environmental stewardship lie not only in institutions and economic incentives, but also in the cultural and symbolic values that shape how societies perceive and protect their natural environment.

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A Appendix

A.1 Theory

Proof of Lemma 1: Solving for equations (6) and (7), we find:

$$q_1^j = \frac{a_{2L}D^j - a_{2D}L^j}{a_{1D}a_{2L} - a_{2D}a_{1L}}, \tag{12}$$

and,

$$q_2^j = \frac{a_{1D}L^j - a_{1l}D^j}{a_{1D}a_{2L} - a_{2D}a_{1L}}, \tag{13}$$

These are the amounts of output in equilibrium if the expressions are positive, meaning that the equilibrium is without specialization. □

Proof of Lemma 2: We search for the Markov Perfect Equilibrium (MPE) of the game. Strategies can therefore only be conditioned on the payoff relevant state variables and past play within the stage game. Here the only payoff-relevant state variable is the identity (i or j) of the president at time t. We proceed by backwards induction. Assume that president i chooses τ, e^i, e^j. The lump sum tax only affects the utility of the president (positively) and the utility of his co-ethnics (negatively). Hence, constraint (3) must be binding. The effort of the president in the other region affects the president's utility only through its cost, which is minimized for $e^j = 0$.□

Proof of Proposition 1: We denote $e^l_{P_k}$ the deforestation effort of president P_k in region l and τ_k the tax rate chosen by president P_k.

Substituting binding condition (3) into the utility of the president, and differentiating with respect to the effort, e^i we obtain the following first order condition:

$$\left(r/\pi^i - \theta^i\right) d'(e^i_{P_i}) = c'(e^i_{P_i}) \tag{14}$$

Hence, $e^i_{P_i}$, which has the same sign as $c'(e^i_{P_i})$ by definition has also the same sign as $r/\pi^i - \theta^i$. Moreover, differentiating (14) with respect to θ^i leads to

$$\left[\left(r/\pi^i - \theta^i\right) d''(e^i_{P_i}) - c''(e^i_{P_i})\right] \frac{\partial e^i_{P_i}}{\partial \theta^i} = d'(e^i_{P_i}). \tag{15}$$

The term in bracket in the left hand side is equal to $c'd''/d' - c''$, which is strictly negative by assumption, hence $e^i_{P_i}$ strictly decreases when θ^i increases.

Notice that we can now set up the value functions:

$$V^i(i) = u^i(d(e^i_{P_i}), \tau_{P_i}) + \overline{\gamma}V^i(i) + (1-\underline{\gamma})V^i(j) \tag{16}$$

$$V^i(j) = u^i(d(0), \tau_{P_j}) + \overline{\gamma}V^i(i) + (1-\underline{\gamma})V^i(j) \tag{17}$$

$$V^j(j) = u^j(d(e^j_{P_j}), \tau_{P_j}) + \overline{\gamma}V^j(j) + (1-\underline{\gamma})V^j(i) \tag{18}$$

$$V^j(i) = u^j(d(0), \tau_{P_i}) + \overline{\gamma}V^j(j) + (1-\underline{\gamma})V^j(i) \tag{19}$$

and that the political support constraints are binding:

$$u^i(d(e^i_{P_i}), \tau_{P_i}) + (\overline{\gamma} - \underline{\gamma}) \left(V^i(i) - V^i(j) \right) = 0 \tag{20}$$

$$u^j(d(e^j_{P_j}), \tau_{P_j}) + (\overline{\gamma} - \underline{\gamma}) \left(V^j(j) - V^j(i) \right) = 0 \tag{21}$$

Solving for this set of linear equations provides an unique solution for the set of six unknowns (the two τs and the four Vs). □

A.2 Additional data description

Table A.1: Folklore data: examples

Motif	Title	English description	Forest folklore #1 (title)	Forest folklore #2 (description)
b75d	Sounds of the time of creation a murmur of the forest	The murmur of forest is heard from the time of creation	1 1	1 1
m84c	Guest of bush spirit	A man spends a night in a forest or desert where spirit live [...]	0 0	1 1
b9	Water in the tree trunk	There is an enormous amount of water inside a tree trunk or a tree turns into water	1 1	1 1
b55	Leaves are fish	Fish grown on branches of a tree or leaves of a tree turn into fish	0 0	1 1

Notes: Authors computations from Michalopoulos and Xu (2021) folklore data.

Figure A.1: Sample coverage

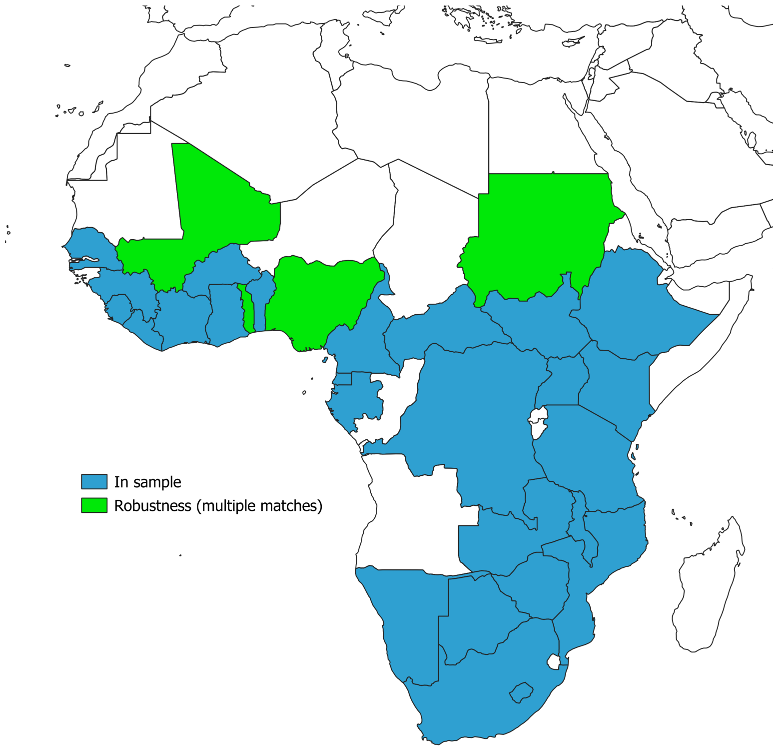

Table A.2: Summary statistics (extended)

	count	mean	sd	p25	p50	p75
Annual Forest loss (share)	10614	0.00	0.00	0.00	0.00	0.00
Forest culture (baseline)	10614	3.79	2.87	1.00	4.00	5.00
Forest culture (alternative)	10614	0.90	1.14	0.00	1.00	1.00
Rel. Forest culture (baseline)	10614	0.07	0.05	0.04	0.06	0.08
Rel. Forest culture (alternative)	10614	0.02	0.02	0.00	0.01	0.03
Production-related motives	10614	0.63	0.78	0.00	0.00	1.00
Growth-related motives	10614	1.13	1.35	0.00	1.00	2.00
Hunger-related motives	10614	3.60	3.11	1.00	3.00	5.00
Subsistence-related motives	10614	1.72	1.48	0.00	2.00	3.00
Leader is of ethnic group	10614	0.05	0.21	0.00	0.00	0.00
Leader's birth homeland	10614	0.04	0.21	0.00	0.00	0.00
Continguous with leader homeland	10509	0.28	0.45	0.00	0.00	1.00
Same language as leader	10136	0.01	0.10	0.00	0.00	0.00
Share ethnic group in cabinet	10614	0.04	0.10	0.00	0.00	0.02
Area homeland (km2)	10509	20175.73	43374.35	1621.24	5313.52	19153.59
Number of new World Bank aid projects	10614	7.49	26.05	0.00	0.00	3.00
Aid project dummy	10614	0.32	0.47	0.00	0.00	1.00
Aid project (environmental, strict)	10614	0.03	0.17	0.00	0.00	0.00
Aid project (environmental, large)	10614	0.06	0.24	0.00	0.00	0.00
Aid project (land saving)	10614	0.23	0.42	0.00	0.00	0.00
Aid project (environmental protection)	10614	0.24	0.43	0.00	0.00	0.00
Aid project (agriculture)	10614	0.10	0.29	0.00	0.00	0.00
Aid project (mining)	10614	0.01	0.11	0.00	0.00	0.00
Δ cropland	10509	0.01	0.31	-0.01	0.00	0.02
Nighttime lights	10509	1.46	2.75	0.01	0.17	2.13
Reforestation (LAI)	1512	0.11	0.50	0.00	0.01	0.06
Reforestation (FPAR)	1512	0.58	2.10	0.01	0.06	0.39
Reforestation (AGB)	1512	0.03	0.11	0.00	0.00	0.03
Δ tree cover	10509	0.08	0.51	-0.01	0.00	0.06
Protected areas (dummy)	10614	0.05	0.22	0.00	0.00	0.00
Protected areas (km2)	10614	72.17	970.65	0.00	0.00	0.00

Notes: Statistics are computed on our final sample, i.e. on the sample used in the estimations, for which all regressors are non-missing. Unit of observation: ethnic homeland $\times$ country $\times$ year, over the period 2001-2021. See text for data sources.

Table A.3: Folklore: correlation

	(1)
Dep. var.	# Tree or Forest Motives
Total # motives	0.054***
	(0.002)
share of subsistence from hunting and gathering	-0.044
	(0.579)
share of subsistence from fishing for the EA group	-0.157
	(0.574)
share of subsistence from pastoralism	0.065
	(0.577)
share of subsistence from agriculture	-0.138
	(0.581)
Intensity of Agriculture	-0.122
	(0.082)
v8==Independent nuclear family, monogamous	-2.399***
	(0.787)
v8==Independent nuclear family, polygyny	-0.823***
	(0.302)
v8==Polygynous: unusual co-wives	-0.447
	(0.341)
v8==Polygynous: usual co-wives	-0.413**
	(0.203)
v8==Minimal extended families	0.585
	(0.706)
v8==Small extended families	-0.388*
	(0.225)
v8==Large extended families	0.000
	(.)
Forest cover homeland, 2000	-0.000
	(0.000)
Total Population, homeland	0.000
	(0.000)
Total area, homeland	-0.003
	(0.002)
N	584
Country FE	Yes

Notes: * significant at 10%; ** significant at 5%; *** significant at 1%. OLS estimations. The unit of observation is the ethnic homeland × country. The dependent variable is the number of motifs which description includes the words "forest" or "tree", from Michalopoulos and Xu (2021) data.

A.3 Dynamics

Table A.4: Effect Dynamics

	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
Dep. var.				Forest Loss				
Forest folklore	High	Low	High	Low	High	Low	High	Low
Leader	–0.708**	–0.195	–0.699**	–0.209	–0.542*	–0.157	–0.576*	–0.176
	(0.298)	(0.263)	(0.300)	(0.260)	(0.293)	(0.229)	(0.295)	(0.227)
Obs.	499	1267	485	1241	7279	7821	7172	7650
Placebo (p-val.)	0.597	0.595	0.592	0.580	0.651	0.444	0.672	0.424
Country-Homeland FE	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Country-Year FE	Yes	Yes	Yes	Yes	No	No	No	No
Country FE	No	No	No	No	Yes	Yes	Yes	Yes
Control group	not yet	not yet	never	never	not yet	not yet	never	never

Notes: * significant at 10%; ** significant at 5%; *** significant at 1%. DID estimates based on de Chaisemartin and D'Haultfoeuille (2024). Standard errors clustered at the ethnic-group × country level. The unit of observation is the ethnic homeland × country, over the 2001-2021 period. The dependent variable is (the log of) total forest loss (in hectares) from Hansen et al. (2013). The forest culture variable is the number of motifs which description includes the words "forest" or "tree", from Michalopoulos and Xue (2021) data. High folklore denotes above median folklore value. Leader is a variable taking the value 1 if the country's leader is of the same ethnicity as the group. We report the ATT over six years (post-treatment) and its standard error in brackets. Placebo (p-val) is the p-value of the joint significance test of the six years pre-treatment. Control group indicates whether the control group is composed of the never treated ethnic groups ("never") or the never treated *and* the ethnic groups that are not yet treated ("not yet").

A.4 The role of African Traditional Religions

Table A.5: Religion

	(1)
Dep. var.	Forest loss
Leader	0.211
	(0.139)
× Forest Culture × No Trad. Rel.	0.037
	(0.040)
× Forest Culture × Trad. Rel.	-0.256***
	(0.035)
N	7868
Fixed effects	Country × Ethnic Group, Country × year
Baseline controls	Yes

Notes: * significant at 10%; ** significant at 5%; *** significant at 1%. PPML estimations in all estimations but (3) and (4) where OLS is used. Standard errors clustered at the ethnic-group × country level. The unit of observation is the ethnic homeland × country, over the 2001-2021 period. The dependent variable is total forest loss (in hectares) from Hansen et al. (2013). The forest culture variable is the number of motifs which description includes the words "forest" or "tree", from Michalopoulos and Xue (2021) data. Traditional religion is a dummy which equals 1 if African Traditional Religions are represented in the Afrobarometer population of the homeland-country, zero otherwise. Leader is a variable taking the value 1 if the country's leader is of the same ethnicity as the group. Controls include: total number of motifs (from Michalopoulos and Xu), forest cover in 2000 (from Hansen), ethnic group's share of subsistence from hunting and gathering, agriculture, pastoralism, and fishing, ethnic group's intensity of agriculture, and dummies for the domestic organization of the ethnic group (monogamous, polygynous, etc., from the Ethnographic Atlas). All control variables are interacted with the leader variable.

A.5 Distances

Table A.6: Distances

	(1)	(2)	(3)	(4)
Dep. var.		Forest Loss		
Leader	0.734***	0.718***	0.711***	0.721***
	(0.226)	(0.220)	(0.219)	(0.224)
× Forest culture	-0.133***	-0.104***	-0.131***	-0.103***
	(0.035)	(0.035)	(0.034)	(0.035)
Cultural Prox.	1.621***			1.749***
	(0.257)			(0.261)
× Forest culture	-0.399***			-0.425***
	(0.047)			(0.053)
Geographic Prox.		0.085		0.108
		(0.099)		(0.096)
× Forest culture		0.016		0.015
		(0.019)		(0.019)
Political Prox.			0.223	0.461
			(0.726)	(0.710)
× Forest culture			-0.006	-0.062
			(0.089)	(0.069)
N	10614	10509	10614	10509
Country×Homeland FE		Yes		
Country×year FE		Yes		
Controls		Yes		

Notes: * significant at 10%; ** significant at 5%; *** significant at 1%. PPML estimations. Standard errors clustered at the ethnic-group × country level. The unit of observation is the ethnic homeland × country, over the 2001-2021 period. The dependent variable is total forest loss (in hectares) from Hansen et al. (2013). The forest culture variable is the number of motifs which description includes the words "forest" or "tree", from Michalopoulos and Xue (2021) data. Leader is a variable taking the value 1 if the country's leader is of the same ethnicity as the group. Cultural prox. is a dummy taking the value 1 if the leader's ethnic group shares the same language as the ethnic group. Geographical prox. is a dummy which equals 1 if the homeland shares a border with the leaders' homeland. Political proximity is the share of the group in the cabinet. Controls include: total number of motifs (from Michalopoulos and Xu), forest cover in 2000 (from Hansen), ethnic group's share of subsistence from hunting and gathering, agriculture, pastoralism, and fishing, ethnic group's intensity of agriculture, and dummies for the domestic organization of the ethnic group (monogamous, polygynous, etc., from the Ethnographic Atlas). All control variable are interacted with the leader variables in the corresponding estimations.