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UN Climate Commitments and the Usability Gap in Nigeria's Agricultural Early-Warning System

[*1]Aro Gilbert C.
[1]Alita Emmanuel C.
[1]Aligwe Augustine E.
[1]Nweze Ifeanyi D.
[1]Igwe Elizabeth A
[2]Okorie Gilbert M

Authors' Affiliation
1-Department of Political Science, Alex Ekwueme Federal University, Ikwo, Nigeria

2-Faculty of Law
Alex Ekwueme Federal University Ndufu Alike Ebonyi State
*Corresponding author:
gilbert.aro@funai.edu.ng

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Abstract

International climate commitments do not always translate into effective domestic outcomes. This article examined why Nigeria's commitment to climate information and early warning had not consistently produced information that farmers could use for timely agricultural decisions. Using a qualitative, document-based case study, the study analysed climate-policy documents, institutional evidence and extensively selected empirical review. Document analysis and process tracing traced the movement from international commitment through domestic institutions to information delivery and use. Guided by Putnam's Two-Level Game theory, the study found that the central problem was not the absence of commitment or climate information, but weaknesses in their institutional translation. Poor coordination, uneven delivery and limited localisation reduced the usefulness of climate information for agricultural decisions. The article argues that the effectiveness of international climate commitments depends on how domestic institutions translate them into services that users can act upon. It recommends stronger coordination, decision-oriented early-warning services and implementation measures centred on the timeliness, relevance and usability of information.

Introduction

International climate commitments matter only when they produce changes within the countries that make them. This is particularly important in agriculture, where the value of climate adaptation depends not only on policy commitments but also on whether farmers receive information early enough to act. In Nigeria, erratic weather patterns such as flooding or prolonged droughts have made the need for timely and accurate climate forecasts even more urgent. However, the central problem is not simply whether such information exists. It is whether the institutions responsible for producing and delivering it can make it useful for agricultural decisions.

This distinction is becoming more prominent in the Nigerian literature. Awolala, et al, (2022) showed that farmers found weather and climate information valuable for making decisions on coping with drought and for agricultural production, but its use was dependent on such factors as access and the methods and timing of its provision. Okoronkwo, et al, (2024) came to similar conclusions regarding southeastern Nigeria, finding that farmers relied on informal networks and radio, but that cost was a significant barrier to obtaining weather information. Most recently, Inkani, et al, (2026) examined an intervention to improve Nigerian climate services, finding that it had little impact on farmers' use of the five different weather and climate services they studied, with poorly integrated information chains being identified as a significant barrier.

The problem becomes more interesting when these findings are considered alongside Nigeria's international climate commitments. Nigeria has identified climate information, meteorological forecasting and early-warning systems as important elements of its adaptation agenda. Yet research on international climate commitments suggests that formal commitments do not automatically produce effective domestic implementation. Peterson and Asselt (2026) identified institutional capacity, policy inconsistency, political interests, monitoring and enforcement, and political will as important risks to NDC implementation. In Nigeria, Noah (2025) examined the domestic legal status of NDC commitments, while Okara and Innocent (2024) questioned the capacity of the Climate Change Act to support the country's climate objectives. These studies establish the importance of domestic institutions, but they largely stop at the level of national climate governance. They do not explain how an international commitment becomes a specific service that farmers can use.

This leaves an important gap. The literature has examined farmer adaptation, climate-information use, and domestic implementation of international climate commitments, but these strands have rarely been connected. We therefore know considerably more about whether farmers use climate information than about the institutional process that determines whether an international commitment produces information that is timely, relevant and usable in the first place. The problem is thus one of institutional translation: how a commitment made within the international climate regime is converted into a functioning domestic service.

This study addresses that problem by asking: Why does Nigeria's international commitment to climate information and early warning not consistently produce information that farmers can use for timely agricultural decisions? The objective is to explain why Nigeria's international commitment to climate information and early warning has not consistently translated into timely and decision-useful information for agricultural decision-making. The article draws on Robert D. Putnam's (1988) Two-Level Game theory. Putnam's central insight was that international commitments are shaped by domestic political and institutional conditions. We extend this logic to the implementation stage and examine how domestic institutions mediate the movement from international commitment to practical delivery. The argument is that the effectiveness of Nigeria's commitment depends not only on what is agreed internationally, but also on how responsibilities, coordination, capacity and information flows are organized domestically.

The article makes a focused contribution to International Relations and climate-governance scholarship. It moves beyond asking whether Nigeria has adopted climate commitments and instead examines what happens to a commitment as it passes through domestic institutions. By connecting international climate governance with the delivery of climate information to farmers, the study identifies

the institutional point at which international ambition can lose practical effect.

Climate adaptation, information and the problem of usability

Research on climate adaptation in Nigeria has established that agricultural vulnerability is not simply a consequence of exposure to changing climatic conditions. It is also shaped by the institutional and informational resources available to those expected to respond. Okafor, et al (2024), found that agriculture accounted for 80.7% of the Nigerian adaptation literature they reviewed, while institutional adaptation represented only 13%. Their finding is important because it exposes an imbalance in the field: scholarship has paid considerable attention to what farmers do in response to climate change but much less to the institutional arrangements that make adaptation possible. Akinkuolie, et al, (2025), reached a related conclusion in their systematic review of Nigerian climate and food-security research. Their review associated flooding, drought and declining agricultural productivity with growing food insecurity, but also identified fragmented policies and inadequate infrastructure as continuing constraints on resilience. The two studies therefore point in the same direction while approaching the problem differently: one identifies an imbalance in what researchers study, while the other shows why institutional conditions remain consequential for what adaptation can achieve.

The household-level literature has nevertheless demonstrated why information and institutional support matter. Alhassan and Haruna (2024) found, across Nigeria and Ethiopia, that income and farm size influenced adaptation choices, but that agricultural extension, community networks and climate-related information also shaped farmers' decisions to invest in climate-smart practices. Mbanasor, et al, (2024) similarly found in southeastern Nigeria that extension exposure, education, credit access and cooperative membership influenced climate-smart agriculture adoption. Kolapo and Kolapo (2023), found comparable effects for conservation agriculture, with extension access, education and association membership influencing adoption and adoption itself improving agricultural productivity. What these studies collectively established was that adaptation depended partly on the quality of the institutional environment surrounding farmers. Information was therefore not an incidental variable. It was one of the resources through which climate risk could be converted into an informed agricultural response.

This insight became more significant when studies began examining the institutions through which adaptation information was delivered. Ifeanyi-Obi, et al (2022) found that weak extension programmes, inadequate personnel, insufficient government funding, policy inconsistency and limited farmer awareness constrained the uptake of climate-smart agricultural technologies in Nigeria. Ikehi, et al (2023) likewise showed that the existence of recommended adaptation strategies did not necessarily result in their adoption within the Niger Delta's agricultural innovation system. The significance of these findings becomes clearer when placed beside the work of Okoronkwo, et al (2024), which found that farmers in southeastern Nigeria relied substantially on neighbours, fellow farmers and radio for climate information while also identifying the cost of accessing weather information as a constraint. The issue, then, was not merely whether farmers possessed knowledge of climate change. It concerned how useful information was produced, reached farmers and entered their decision-making environment.

The more focused climate-information literature has made this distinction explicit. Awolala, Mutemi, Adefisan, Antwi-Agyei, and Taylor (2022) found in Central-Southern Nigeria that rainfall amount, onset and cessation, rainfall distribution and dry-season information were among the most useful forms of weather and climate information for agricultural decisions. They also found that mobile phones, radio, extension officers and farmers' groups were preferred channels of delivery. Their central argument was not simply for more forecasts, but for impact-based forecasts, response advisories and stronger collaboration between meteorological, agricultural, water-management and disaster-risk institutions. Seydou, Agali, Aissatou, Seydou, Issaka, and Ibrahim (2023) provided useful evidence from neighbouring Niger: where seasonal agroclimatic information was accompanied by practical advice, farmers altered practices and investment decisions. Their findings therefore complement rather than contradict the

Nigerian evidence. The critical issue was not information in the abstract, but the connection between information and a decision that farmers could actually make.

That connection has become the central concern of the newer literature. Pienaah, Batung, Saaka, Mohammed, and Luginaah (2023) found that exposure to early warnings was positively associated with perceived climate preparedness among smallholder farmers in Ghana. Yet Awolala et al. (2022) had already shown that users required information at particular temporal scales and through particular channels, while Sansa-Otim, et al. (2022) found that farmers and policymakers who received meteorological information generally considered the forecasts good but still identified inadequate timing and insufficient location-specificity as weaknesses. Thus, the literature does not support a simple proposition that more information automatically produces better adaptation. It points instead to a more demanding standard: information must be timely, sufficiently localised, understandable and connected to the decision it is intended to support.

Recent evidence strengthens this argument. Inkani, et al. (2026) found that the IFAD-CASP intervention in Sokoto and Katsina significantly improved farmers' use of only one of five weather and climate services produced by the Nigerian Meteorological Agency. They attributed the broader weakness partly to poor linkages among producers, enabling institutions and users. Demissie, et al. (2025) similarly located climate-information delivery within a wider institutional landscape involving regional, national and subnational actors, while identifying continued access problems for smallholders across Africa, including Nigeria. The significance of these studies is that they move the debate beyond the familiar claim that farmers lack climate information. The emerging evidence suggests a translation problem: information may be generated, but weaknesses in institutional coordination, dissemination and user orientation can prevent it from becoming a usable adaptation service.

This is also where the literature on climate-smart agriculture becomes relevant. Mabhaudhi, et al. (2025) showed that different forms of weather and climate information were linked to particular agricultural practices, including irrigation, water harvesting, improved varieties, crop insurance and crop diversification. The implication is straightforward but important: the usefulness of climate information depends partly on whether it is translated into advice that corresponds to an agricultural practice. Mojisola, et al (2026) made the point even more directly in their study of rice enterprises in Nigeria and Kenya. They found that access alone did not guarantee use; localisation, interpretability, decision relevance and digital readiness were associated more strongly with perceived usability.

The literature has therefore moved through an important conceptual progression. Earlier adaptation studies largely asked whether farmers adapted and what influenced their choices. Climate-information studies then asked whether farmers received information and which channels they preferred. The newer evidence asks a more demanding question: whether the information received was usable for a particular decision. This progression is important for the present article because it shifts attention from the farmer as the endpoint of climate policy to the institutional chain through which climate knowledge is converted into a public adaptation service.

International commitment and domestic climate governance

The institutional question becomes sharper when the climate-information literature is read alongside scholarship on the international climate regime. The Paris Agreement does not simply impose a uniform implementation model on states. Its reliance on nationally determined contributions places considerable responsibility on domestic political and institutional systems. David, Lumkowsky, and Dannenberg (2022) found that the quality of national political institutions was the strongest explanatory factor in the credibility of national climate commitments. Peterson and van Asselt (2026) similarly identified institutional capacity, policy inconsistency, political opposition, monitoring and enforcement, and political will as important risks to NDC implementation. Their analysis is particularly useful because it shows that implementation problems do not take a single form and that institutional risks vary across countries. Oh and Kim (2026) add that political stability and climate vulnerability affected countries' ability to participate consistently in the NDC update process. Read

together, these studies shift attention away from the formal existence of international commitments toward the domestic political conditions that determine whether those commitments can be sustained and implemented.

The Nigerian literature has brought this question into the country's domestic legal and institutional setting. Noah (2025) examined the relationship between Nigeria's NDC commitments and the Climate Change Act 2021 and argued that the domestic legal status of NDC targets mattered for their implementation. G. C. Okara and R. Innocent (2024) similarly questioned whether the Climate Change Act provided an adequate basis for achieving Nigeria's mitigation and adaptation objectives under the Paris Agreement. Their arguments connect directly with the broader international literature: international commitments acquire practical significance through domestic law, institutions and political capacity. Ezeumeh (2023) adds the question of international support, arguing that Nigeria's low-carbon transition depended partly on external finance and the effective use of the market and non-market mechanisms available under the Paris Agreement. Isah, Egli,. Stünzi, and Schmidt (2025) further show that climate-finance needs within NDCs were themselves shaped by domestic political institutions, technical capacity, stakeholder engagement and international relationships.

These studies establish an important proposition for climate governance in Nigeria: an international commitment does not implement itself. Its meaning is shaped as it passes through domestic institutions, legislation, financing arrangements and administrative practices. Yet this literature has largely examined implementation at the level of national targets, legal frameworks and climate finance. It has not followed a specific adaptation commitment down to the level at which citizens are expected to experience its practical effects.

That omission becomes important when placed against the climate-information literature. The latter has already demonstrated that the effectiveness of early warning depends on coordination between meteorological institutions, extension services, communication providers, government agencies and users. Awolala et al. (2022) called for stronger collaboration between Nigeria's meteorological authority and agricultural, water-management and disaster-risk institutions.. Inkani et al. (2026) subsequently found that precisely these linkages remained weak in an actual intervention involving Nigerian public institutions. Demissie et al. (2025) likewise showed that climate-information and agro-advisory services involved multiple levels of governance rather than a single provider. The domestic implementation problem identified in the NDC literature therefore appears in concrete form within the climate-information system: implementation depends on whether institutions can work across organisational boundaries and translate technical information into services that users can act upon.

This connection is largely missing from existing scholarship. The adaptation literature has demonstrated farmers' vulnerability and the importance of information. The climate-service literature has increasingly demonstrated that information must be usable and institutionally connected. The international climate-governance literature has shown that the credibility and implementation of climate commitments depend on domestic political and institutional conditions. What has received considerably less attention is the process connecting these levels.

That is the precise space in which this study is located. Nigeria's climate commitment is not examined here as an abstract international pledge, nor is early warning treated simply as a technical forecasting problem. Instead, the study asks how an international climate commitment is translated through domestic institutions into an agricultural service and where the translation becomes disconnected from the needs of intended users. The distinction is particularly important under Nigeria's current NDC. Nigeria has committed to developing early-warning systems and meteorological forecasts to reduce the effects of climate extremes in food and agriculture, including their rollout in 18 states alongside strengthened agricultural extension services. This makes early warning more than a general adaptation aspiration. It is a specific policy commitment through which the relationship between international climate governance and domestic implementation can be examined.

The literature therefore leaves a focused question rather than a general problem of climate governance.

We already know that Nigerian farmers face serious climate risks; that climate information can influence agricultural decisions; that users value information that is timely, localised and decision-relevant; and that institutional linkages remain weak in parts of Nigeria's climate-service system. We also know that the implementation of international climate commitments depends on domestic political and institutional capacity. What remains insufficiently explained is how these two processes intersect. The present study addresses that intersection by examining the domestic translation of Nigeria's international commitment to agricultural early-warning services. Its concern is not simply whether Nigeria has made the commitment, nor whether farmers have access to forecasts. It is the institutional process between the two: how the commitment is interpreted, organised, delivered and ultimately made usable for agricultural decision-making.

Theoretical Framework

The study draws on Robert D. Putnam's (1988) Two-Level Game theory, which was developed to explain the interaction between international negotiations and domestic politics. Putnam argued that governments operate simultaneously at two levels: at the international level, they negotiate with other states; at the domestic level, they must respond to political institutions, interests and pressures that shape what can be accepted and implemented. International commitments, therefore, cannot be understood independently of the domestic political conditions within which they are negotiated and subsequently pursued.

Putnam's original formulation focused primarily on negotiation and ratification. This study extends its logic to the domestic implementation stage of an international climate commitment. The extension is justified by the central puzzle of the study: Nigeria has undertaken international climate commitments, yet the translation of those commitments into usable climate-information services remains uneven. The relevant question is consequently not only what Nigeria committed to internationally, but how domestic institutions, administrative relationships and competing priorities shape what the commitment becomes in practice.

The framework is particularly useful because it rejects the assumption that the state operates as a unitary actor. Putnam's model draws attention to domestic institutions and actors whose interests and constraints can influence the state's ability to deliver on international commitments. In the Nigerian climate context, this directs attention to the institutions responsible for climate policy, meteorological information, agricultural extension and early-warning delivery, as well as the relationships among them. The question is therefore whether the international commitment is effectively translated across these domestic institutional settings.

This logic complements the climate-governance literature reviewed above. David G. Victor, M. Lumkowsky, and Dannenberg (2022) associated the credibility of climate commitments with domestic political institutions, while Peterson and van Asselt (2026) identified institutional capacity, policy inconsistency, political interests, monitoring and enforcement, and political will as important implementation risks. In the Nigerian context, Noah (2025) and Okara and Innocent (2024), similarly drew attention to the relationship between Nigeria's international climate commitments and its domestic legal and institutional arrangements. These studies support the application of Putnam's central insight beyond the negotiation stage: international commitments acquire practical meaning through domestic political and institutional processes.

For this study, the Two-Level Game is therefore operationalised through three analytical points. The first is commitment translation: how Nigeria converts its international climate commitment into domestic laws, policies, institutional mandates and programmes. The second is institutional mediation: how responsibilities, resources and coordination among domestic institutions shape implementation. The third is implementation outcome: whether these arrangements ultimately produce climate information that is timely, sufficiently localised and usable for agricultural decisions. The framework can thus be represented as:

International commitment → domestic political and institutional mediation → implementation outcome.

The study does not assume that institutional weakness is necessarily the explanation. Rather, the

framework provides a basis for investigating where and why the translation process becomes disrupted. This may occur through fragmented mandates, weak coordination, limited capacity, competing institutional priorities or a mismatch between information produced by technical institutions and the information required by farmers. The empirical analysis will determine which mechanisms matter in the Nigerian case.

The theoretical contribution, therefore, lies in bringing the international and domestic levels into the same explanation. Rather than treating Nigeria's climate commitment as an international pledge and climate-information delivery as a separate domestic policy issue, the study examines them as parts of one implementation process. Putnam's (1988) Two-Level Game provides the theoretical starting point; the commitment–mediation–outcome sequence constitutes the study's analytical framework.

Methodology

The study employed a qualitative case-study design to understand how Nigeria's international commitments were domesticated in policies and practices related to climate information and early warning for agricultural production. Nigeria provides a focused case because the country has made formal commitments to strengthening climate information and early warning, while existing evidence points to continuing gaps between information provision and its practical use by farmers. The study used three categories of evidence, including Nigeria's international and national climate policy documents, documents, and publications by relevant government and international institutions, and the fourty scholarly works retrieved for the review. The last category was limited to those published in reputable journals and/or open-access resources. The selection criteria for the first two categories were based on their relevance to Nigeria's international obligations, institutional arrangements for climate information, early warning, and agricultural adaptation, and the provision of climate information services and their use. By reviewing the selected readings, the researcher juxtaposed Nigeria's international obligations concerning climate change, information, and early warning against their domestic policies and practices.

The study also used a mixed-methodology approach, combining document analysis and process tracing. The former was used to reveal the mandates, policy responsibilities, coordination mechanisms, and capacities for generating and disseminating climate information contained in the documents. Process tracing was applied to establish the implementation sequence, starting with international obligations, through domestic institutional arrangements, and finally, the provision of climate information for agricultural use and adaptation. The study further compared the evidence elicited from the different documents to identify institutional similarities and differences and the points where processes broke down.

It used Putnam's (1988) Two-Level Game as a theoretical framework to provide context and understanding of how domestic institutions shaped the art of international agreements on climate information and early warning. The study does not claim statistical generalisation. Its purpose is narrower: to explain why a formal international commitment has not consistently translated into timely and decision-useful climate information for Nigerian farmers.

Findings and Analysis

From international commitment to domestic implementation

Nigeria's commitment to climate information and early warning is not merely rhetorical. It has become increasingly explicit within the country's climate-policy architecture. Nigeria's latest Nationally Determined Contribution identifies the development of early-warning systems and meteorological forecasts as an adaptation measure for food and agriculture (Noah, 2025). More specifically, the NDC 3.0 provides for the rollout of early-warning systems and meteorological forecasts in 18 states, alongside the strengthening and modernisation of agricultural extension services in the same states This is important because it provides a clear domestic policy pathway for the international commitment: climate information is linked to agricultural extension rather than being considered as a meteorological service. The NDC thus explicitly recognizes that for agricultural planning, a forecast has to go beyond the point of its production in order to have an impact.

Yet, the existence of a formal pathway does not necessarily mean that the pathway works as intended. This is consistent with the wider implementation literature. Peterson and van Asselt (2026) identified institutional capacity, policy inconsistency, political interests, monitoring and enforcement, and political will as important risks to NDC implementation. In Nigeria, Noah (2025) raised a related question about the relationship between international NDC commitments and domestic law, while Okara and Innocent (2024) argued that the Climate Change Act 2021 does not provide sufficient assurance that Nigeria will achieve its climate objectives.

The significance of these arguments for climate information is straightforward. An international commitment becomes meaningful only when domestic institutions give it responsibilities, resources and channels of implementation. The evidence suggests that Nigeria has made progress on the first of these. It has identified early warning and meteorological information within its adaptation commitments and has attached these measures to agricultural action. The harder problem lies in what happens between the formal commitment and the farmer.

This is where the Nigerian evidence becomes revealing. Okafor, Ajaero, Madu, Nzekwe, Otunomo, and Nixon (2024) found that institutional measures represented only 13% of the climate-adaptation studies they reviewed in Nigeria, despite the importance of policies, legal arrangements and institutional support to resilience. Their finding is useful here because it points to an imbalance in the existing evidence: much of the literature examines what farmers do in response to climate change, while less attention is given to the institutions that are expected to make adaptation possible.

The result is a clear distinction between commitment and implementation. Nigeria has increasingly defined what it wants to achieve. The evidence is less reassuring about how effectively the different institutions involved in achieving it work together. In Putnam's (1988) terms, the international commitment enters a domestic setting in which its practical meaning is shaped by institutional interests, capacities and relationships. The implementation gap therefore begins not with the absence of commitment, but with the domestic conditions through which that commitment must pass.

The institutional break in the information chain

The next stage of the analysis follows the commitment into the institutions responsible for producing and delivering climate information. Here, the evidence points less to an absence of information than to weaknesses in the connections between those who produce it and those expected to use it.

The evidence from Nigeria is particularly clear on this point. Inkani, Mashi, Oghenejabor, Jenkwe, and Sani (2026), examining the IFAD-CASP intervention in Sokoto and Katsina, found that the programme improved farmers' use of only one of five weather and climate services produced by the Nigerian Meteorological Agency. More importantly, they identified weak collaborative linkages among climate-information producers, enabling institutions and consumers as a major reason for the low overall utilisation of the services. This finding matters because it locates the problem between production and use. The Nigerian Meteorological Agency can produce a forecast, but production alone does not determine whether a farmer receives information in a form that can guide action. Other actors have to connect the forecast to the agricultural context. Extension officers, farmer organisations, media providers, ICT platforms and other intermediaries all become part of that chain.

The same pattern appeared in the work of Awolala, Mutemi, Adefisan, Antwi-Agyei, and Taylor (2022). Their study of weather and climate information in Central-Southern Nigeria found that use was influenced by farmers' characteristics, experience, income, rainfall conditions and access to meteorological services. They also found that distance from meteorological stations and group membership affected interest in using climate information for drought preparedness. The implication is that information does not travel through a neutral system. Access depends on the institutional and social arrangements surrounding its delivery.

Okoronkwo, Ozioko, Ugwoke, Nwagbo, Nwobodo, Ugwu, and Mbah (2024) provided further evidence from southeastern Nigeria. Farmers relied mainly on

neighbours, fellow farmers and radio for climate-related information, while the cost of accessing weather information was identified as a constraint. This is important for the implementation chain because it shows that official climate information does not necessarily reach farmers through official channels. Informal networks can become the practical bridge between technical information and agricultural communities.

The problem, therefore, is not simply fragmentation. It is that the institutions occupying different points in the chain do not always operate as one delivery system. The NDC 3.0 itself places early-warning systems alongside agricultural extension, which suggests that Nigeria recognises the need for this connection (Nigeria, 2025). However, the empirical evidence shows that the connection remains uneven in practice.

This finding also speaks directly to Putnam's framework. The international commitment is translated into domestic responsibilities, but the domestic level is not a single actor. It contains institutions with different mandates and operational capacities. The effectiveness of the commitment consequently depends on whether those institutions can convert their separate responsibilities into a functioning chain of delivery. Where that chain is weak, the international commitment can remain formally intact while its practical effect becomes diluted.

From information access to information that farmers can use

The final stage of the process revealed the most important distinction in the study: receiving climate information is not the same as being able to use it.

The evidence does not support the claim that Nigerian farmers simply lack climate information. In several settings, farmers receive forecasts through radio, social networks, extension contacts and other channels. The more difficult issue is whether the information arrives at the right time, in a form that can be understood, and with enough local relevance to support a decision. Mojisola, Ume, Anugwa, Gabriel, Cecilia, Naomi, and Nnamchi (2026) provided particularly useful evidence on this point. Their study of rice-related actors in Nigeria and Kenya found that access to climate information was uneven, but access alone did not guarantee use. Perceived usability was strongly associated with localisation, interpretability and decision relevance. Information that was not location-specific or was difficult to interpret was less likely to be considered useful even where it was available.

This finding helps explain why the implementation problem cannot be solved simply by increasing the volume of forecasts. A farmer does not need information in the abstract. The farmer needs information that can answer a practical question: When should I plant? Should I delay planting? Should I change the crop? Should I prepare for flooding? Should I apply fertiliser now or wait? The value of the forecast therefore depends partly on how closely it fits the decision that has to be made.

Awolala et al. (2022) reached a related conclusion from a different angle. Their study described decision-driven and people-centred climate information as important to effective uptake, while showing that user characteristics and access conditions affected the use of information for drought preparedness. Similarly, Alhassan and Haruna (2024) found that agricultural extension, community networks and climate-related information influenced farmers' adaptation decisions in Nigeria and Ethiopia. These findings suggest that the last stage of implementation requires more than dissemination. It requires translation. Technical forecasts have to be converted into information that fits local agricultural conditions and can support a particular decision. That process places agricultural extension and other intermediaries in a critical position. Where these links are weak, information may reach farmers without becoming actionable knowledge.

The evidence also shows why the problem should not be described as a complete failure of Nigeria's climate-information system. Farmers do use climate information, and some interventions have improved utilisation. The more precise finding is that use is uneven because the institutional chain does not consistently convert available information into timely and decision-relevant advice. This is a more defensible conclusion and fits the evidence better than a simple claim of institutional failure.

What the evidence shows about the implementation gap

The three stages of the analysis point to one connected problem. Nigeria has moved from an international commitment to a domestic policy framework that explicitly recognises early warning and meteorological forecasts as tools for agricultural adaptation. The difficulty emerges further along the chain. Domestic institutions do not always connect their responsibilities effectively, and information does not consistently move from technical production to agricultural advice. Even when farmers receive information, its usefulness depends on timing, localisation, interpretation and relevance to the decision at hand. The evidence therefore supports a qualified implementation gap, rather than a complete failure of climate governance. The commitment exists. The institutions exist. Climate information is produced and, in some cases, used. What remains inconsistent is the connection between these stages.

This is where our analytical framework is most useful. The problem can be traced as follows:

International commitment → domestic institutional mediation → information delivery → decision-usefulness

The break is not located at one single point. It occurs through the relationships between the stages. Weak institutional coordination affects delivery; weak delivery affects access; and limited localisation or interpretability affects use. The international commitment consequently loses some of its practical force as it moves through the domestic system. This finding also refines Putnam's (1988) Two-Level Game perspective. The domestic level is not simply a space in which international commitments are accepted or rejected. It is where those commitments are worked out through institutions. In Nigeria's case, the practical outcome of an international climate commitment depends on whether domestic actors can maintain the chain from commitment to service and from service to decision.

Discussion

The findings point to a specific implementation problem. Nigeria has not failed to recognise climate information and early warning within its international climate commitments. The problem emerges in the movement from commitment to delivery. Nigeria's NDC 3.0, for example, explicitly links early-warning systems and meteorological forecasts to agricultural adaptation (Nigeria, 2025). Yet the evidence shows that the existence of this commitment does not guarantee that information will reach farmers in a form they can use.

This helps bring together findings that have often been treated separately in the literature. Research on Nigerian farmers shows that climate information influences adaptation, but its value depends on access, timing, communication channels and the conditions under which farmers make decisions (Awolala et al., 2022; Okoronkwo et al., 2024; Alhassan & Haruna, 2024). Inkani et al. (2026) add an important institutional dimension by showing that weak connections among information producers, supporting institutions and users can limit utilisation. Mojisola et al. (2026) similarly demonstrate that access does not necessarily produce use when information lacks local relevance, interpretability or decision value. Taken together, these findings suggest that the central weakness is not simply inadequate information. It is the institutional translation of information into agricultural decisions.

This finding extends Putnam's (1988) Two-Level Game theory in a useful direction. Putnam showed how international commitments are shaped by domestic political and institutional conditions. Our evidence suggests that this domestic mediation continues well beyond negotiation and formal adoption. An international commitment passes through institutions with different mandates, capacities and relationships before it reaches its intended beneficiaries. The Nigerian case therefore shows that the effectiveness of an international climate commitment depends partly on what domestic institutions are able to do with it.

The implication is important for International Relations. International climate commitments are often assessed through adoption, reporting and policy alignment. These remain important indicators, but they tell us little about whether a commitment produces a usable outcome. In Nigeria, the more revealing question is what happens between the formal promise to strengthen climate information and the farmer who needs to decide whether to plant,

delay planting or prepare for an expected hazard. At that point, institutional coordination, extension systems, communication channels and the quality of the information become part of the meaning of the international commitment itself.

The study therefore identifies a more precise implementation gap. Nigeria does not primarily lack a climate-information commitment; it lacks a consistently functioning institutional chain between that commitment and decision-useful information. This explains why greater production of forecasts alone may not resolve the problem. Unless information is delivered through institutions capable of making it timely, local and understandable, the distance between international climate ambition and agricultural adaptation remains. This also offers a broader lesson for climate governance. Implementation should not be judged only by whether a state has made the right commitment or created the required institutions. It should also be judged by whether those institutions can connect policy with the people for whom the commitment is intended. In the Nigerian case, that connection remains uneven. The challenge is therefore less about making another commitment than about making the existing one work at the point where climate risk becomes an agricultural decision.

Conclusion and Recommendations

This study asked why Nigeria's international commitment to climate information and early warning has not consistently produced information that farmers can use for timely agricultural decisions. The evidence shows that the central problem lies in institutional translation. Nigeria has made the commitment and established relevant policy and institutional arrangements, but weak coordination, uneven delivery, and limited translation of technical information into timely and locally relevant agricultural advice reduce its practical effect.

The study therefore concludes that international commitment alone does not guarantee implementation. What matters is the domestic institutional chain through which that commitment reaches its intended users. This extends Putnam's (1988) Two-Level Game perspective by showing that domestic mediation remains important after an international commitment has been made: institutions determine whether the commitment becomes a functioning public service.

Three policy priorities follow directly from this finding. First, climate-information and agricultural institutions should establish stronger mechanisms for coordinated delivery rather than operating at separate points in the information chain. Second, early-warning services should be designed around farmers' actual decision periods, with greater attention to local relevance and clear interpretation. Third, NDC implementation should be assessed not only by the existence of policies, forecasts or warning systems, but by whether farmers receive information that is timely, understandable and actionable. The broader lesson is simple: Nigeria's challenge is no longer merely to commit to climate information, but to make that commitment work where climate risk becomes an agricultural decision.

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