

# **BIODIVERSITY MANAGEMENT: AN EXAMPLE OF INTERACTION BETWEEN EXTERNAL DEMAND FOR PROVISION OF A GLOBAL PUBLIC GOOD AND INSTITUTIONALISATION OF LOCAL RULES.**

**BY**

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## **Introduction**

This article focuses on cross scale linkages that faces by biodiversity management. Considering biodiversity as both, a global and a local public good, we propose to show how external demand for provision of a global public can interact with the institutionalisation of local rules.

The analyse takes place in Andapa region (Madagascar), considered as a pilot site for decentralisation of natural resources management. The policy process has been implemented by an international donor agency managing protected area. It establishes tripartite arrangements including the Local Community, the Municipality<sup>1</sup> to which the Local Community is administratively linked and Waters and Forests services.

Following (North 1990), our approach is based on the view that direction of institutional change is shaped by the interaction between institutions and organisations, where institutions are the rules of the game and organisations are the players.

Therefore, we use a Principal-Agent model, as a positive tool, to represent how the relation, arising between the international organisation and the Local Community concerned by the decentralisation, interacts with the institutionalisation of rules. The construction of the model involve an intermediary level to represent vertical cross scale linkages faced by biodiversity management. None of the relations will be formalised in the article.

The model shows that *due the relation arising between Local Community and the conservation organisation during the design of rules, The organisation in charge of implementation acquires a central role in a system it establishes and in which it does not constitute a formal stakeholder.*

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<sup>1</sup> Municipality refers to the Malagasy “Commune rurale” which is the basic administrative level .

Concluding comments will emphasise on the need to reinforce the certainty of Local Community about its rights as a way for the system to recover its initial incentive structure based on the recognition of exclusive management rights.

The article will first present general characteristics of the policy implemented and the context of the region studied. Then the model will be described in a second part. Finally, conclusion and perspectives will be set.

## **1 Context**

### **1- 1 Formal characteristics of a Malagasy policy for local management of renewable resources<sup>2</sup>**

The policy process engaged in Andapa region is based on Gelose policy (Gestion Locale Securisée), promulgated in Law 96-025. This policy results from the consideration of free access as the main cause of natural resources degradation, and as a consequence of the incapacity of the State to assume its prior policy.

Gelose policy establishes a tripartite contract including: the local community of the natural renewable resources concerned; the Municipality<sup>3</sup> linked with the local community; and administration services (Waters and Forests services if forest is the renewable resource considered).

A Gelose contract recognises the *transfer to local communities of exclusive rights to control the access, manage and valorise the resources on their area.*

The process to establish a contract must follow several steps:

- a voluntary demand addressed by local population for the transfer, and constituted after prior information.
- a *patrimonial approach* based on the prior definition of long-term common objectives and realised with intervention of an “*environmental mediator*”.
- the “relative securisation of land rights” to secure lands, situated in the area concerned, to their respective legitimate owners. (“relative” means that this land plan is locally legitimate even if not ensured by a legal plan).
- Constitution of the Local Community Association and its *village committee* (COGE) composed of several elected representatives of the local community. This committee can have various responsibilities such as delivering harvest rights or managing a collective fund.

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<sup>2</sup> (Babin et al. 1998)

- The design of collective rules aiming at a better use and economic value of renewable resources.

The contract is signed for three years before being renewable.

### **1-2 What's new with formal rules after setting of Gelose contracts in Andapa region?**

Andapa region is circled by two forested protected areas managed by an international donor agency (wwf-andapa) since 1993. This organisation has implemented Gelose policy in several villages situated in the buffer zone. The contracts set explicitly aim at *conservation* of natural resources. Therefore, they recognise exclusive user rights to the Local Community and forbid any use of forest products for a commercial purpose.

To give a quick view of what's new with formal rules after the implementation process, we present only rules that are well known by local population and that constitute the main change. These rules respectively refer to swidden hill rice<sup>4</sup> practices and wood harvests. It is important to note that swidden hill rice practices have a key meaning Andapa region for several reasons: cultivate swidden hill rice procures the major source of alimentary consumption for people living in villages settled near the forest; it is also a major way of acquiring new lands; it is embedded in cultural norms; and it is a main focus of control because protected area agents and Waters and Forests services consider it as a direct cause of deforestation<sup>5</sup>.

Main innovations in formal rules designed in the contract are:

- to recognise to the Local Community exclusive user rights on natural resources situated on its area. This rule has important consequences on tavy<sup>6</sup> practices as it now excludes people from neighbourhood villages to appropriate new fields with swidden hill rice on the area concerned by the contract.
- to forbid commercial use of user rights. Therefore it is now forbidden for a Local Community member to harvest wood in the purpose of selling it to people of other villages .
- to allow the Local Community members to refer to the Village Committee to obtain and pay its quoted- harvest-rights instead of referring to Waters and Forests services.

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<sup>3</sup> Municipality refers to the Malagasy "Commune rurale" which is the basic administrative level

<sup>5</sup> (Rheyne 1999)

<sup>6</sup> Tavy = swidden hill rice cultivation that needs forest clearing.

Procedure to obtain authorisation for tavy practices remain the same: one has to obtain a formal paper signed by Waters and Forests services localised in the main town of the region, via its representative localised in the village (which is usually part of the village committee). As before, all uses of resources situated in the protected area remain forbidden.

Before going further, two notes must be made:

- 1) It is important to note that villages studied in that article (Antsahameloka and Belambo Lokoho) were *pilot-sites* for the implementation of Gelose policy. Thus they generally present the main user attributes required for self-governance<sup>7</sup> and they got quite favourable conditions for information and involvement comparing with what is required to institutional change (Ostrom 1990). Therefore, let's recall that the article's purpose is not to compare the devolution process in Andapa with conditions required for institutional change, but rather, to analyse how the informal relation arising between the organisation in charge of devolution and the local population concerned, influences institutional change.
- 2) Given that purpose, the article emphasises the period devoted to the design of operational rules set in the contract. Thus it pays little attention to formal stakeholders of the co-management contract (i.e. the municipality and Waters and Forests Administration). This is realistic because, during that period, influence of the conservation organisation considerably limits their policy space<sup>8</sup>.

## **2 A Principal-agent model with intermediary level : a vertical and informal relation that will interact with the institutionalisation of rules**

### **2-1 General characteristics of Principal Agent models with a supervisor**

There are three sources of emergence of an agency relation: the attempt of a principal to extract as much rent from the agent as possible; risk sharing ; and the need to limit monitoring costs.

The Principal agent model can be used to analyse situations in which : the Principal delegates tasks to the Agent and thus designs incentive system to motive the Agent to act in the Principal's objectives. Moreover, those situations are frequently subject to informational asymmetries. For example when the Principal can not perfectly know what actions are undertaken by the Agent.

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<sup>7</sup> (Ostrom 1999)

<sup>8</sup> The conservation organisation helps Waters and Forests services with construction of new offices, providing motorbikes...

To explore hierarchical and cross scale situations, this type of model can be enriched by the introduction of an intermediary level. Three reasons usually justify the choice of a three levels hierarchy:

- communication cost;
- double moral hazard;
- incomplete character of the contracts.

Our choice to use such model to analyse vertical cross scale linkages faced by biodiversity management can be explained by the possible tool provided by the model to conceptualise “intermediary policies”<sup>9</sup> that result from the movement of contractualisation and subsidiarisation of public policies. As biodiversity presents aspects of a global public good, but requires local rule making, conceptualisation of this kind of policies greatly help to envisage cross scale linkages of biodiversity.

The ways provided by Principal agent models with a third level for this conceptualisation derives from the answers given to double moral hazard and incomplete character of contracts.

Double moral hazard can represent the fact that the Principal does not know both the rules designed and the actions undertaken by the agent<sup>10</sup>. And the incomplete character of contracts can conceptualise the flexibility<sup>11</sup> of the action, that is even when the contract is set, all the rules aren’t defined and thus there is room for flexibility of the arrangement set.

Considering vertical problem that faces biodiversity conservation as Principal Agent has been reviewed in (Cardenas 2001).

## **2-2 Application of the model to the relation between the State and external donors; the conservation organisation and Local Community**

To identify the cross-scale linkages that can influence rules in use for biodiversity management, we propose to apply a Principal –agent model with an intermediary level in a positive purpose and analyse of devolution process in Andapa region.

The model suggested is as follow :

- the Principal is the State and external donors
- the Agent is the Local Community concerned
- the intermediary level is the organisation in charge of implementation of the devolution.

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<sup>9</sup> (Winter 2001)

<sup>10</sup> In the theory of the firm this generally refers to the fact that the principal does not know about both the production realised and the technology used by the agent(Tirole 1986).

<sup>11</sup> (Duran and Thoenig 1996)

The Principal's objectives are to ensure biodiversity conservation and to prevent the protected area from access by cultivators and harvesters.

Due to informational asymmetries, the Principal through its intermediary level, delegates control and operational decision making to the Agent.

To make the Agent realise the Principal's objectives, the Principal gives the Agent different types of incentives.

Used in a *positive* way, this model will help us to characterise the relation that arose between WWF-Andapa and the local population.

As the article emphasises the local relation between Local Community and the conservation organisation, we will first briefly explicit the link between the Principal and the Intermediary level and then we will focus on the relation between the Intermediary level and the Agent.

### **2-2-1 The Principal – Intermediary relation : Influence of national policy choices on local projects**

To identify the link between the Principal (State and external donors) and the Intermediary level (the conservation organisation), we compare on one hand national policy choices made by Madagascar concerning biodiversity conservation and on the other hand, actions undertaken by WWF-Andapa.

#### Policy choices characterising the Principal:

National policy choices made by Madagascar concerning biodiversity are embedded in the Environmental National Action Plan. National orientations concerning biodiversity management can be sum as follow:

- the first phase (1991- 1996) emphasised on biodiversity conservation through **protected areas**.
- the second phase (1997-2001) is characterised by the creation of an organ aiming at **Search and biodiversity Valorisation**.
- In the same time, **Natural Renewable Resources decentralisation** was at stake and Gelose policy was offering opportunities for new institutional arrangements to solve local dilemmas.

- In 2000, the establishment of National Strategy for Biodiversity recognises that biodiversity concerns a wide range of actions, including specific and targeted actions and **actions with larger scope.**

#### Actions undertaken by the Intermediary level :

Actions operated by the conservation organisation follow the orientations of the Malagasy Environmental national Action plan:

- 1993 : WWF-Andapa arrived in Andapa region to manage two protected areas through a Development and Conservation Integrated Project .
- 1998 : The statute of the Integral Natural Reserve is modified into National Park to allow eco-tourism and make valorisation possible .
- In the same time, WWF-Andapa engages devolution of natural resources management and three Gelose contracts were made official in 2000. As they were pilot sites, these contracts benefited from a process of population involvement which has been relatively regular.
- 2001 : WWF-Andapa extends its scope of action to the forest corridor outside buffer zone of protected areas.

It results from this comparison that actions undertaken by the conservation organisation regularly follow National policy choices concerning biodiversity. This describes the link the Principal (State and external donors) and the Intermediary level (WWF-Andapa).

This link is interesting as it identifies a way by which global norms interfere on the local level. Nevertheless, a way to investigate deeper that link could consist in analysing relations between external donors and employees of the conservation agency (wage basis calculation, work indicators) .

### **2-2-2 The relation between the Intermediary level and the Agent**

To characterise the relation between the Intermediary level (conservation organisation) and the Agent (Local Community), we will first present the different incentives that can influence local population. Then we will derive two testing propositions characterising the relation.

#### A Incentives transmitted by the Intermediary level to the Agent

Different elements affect the relation between the conservation organisation and the local population. Although these are not voluntary incentives in reality, in the model they can be interpreted as incentives transmitted by the Intermediary level to the Agent. Different types of incentives can be classified, we will class them according to the three following categories :

- incentives arising from the devolution process but that depend on the conservation organisation to be effective;
- incentives through project actions to compensate for forest clearing limitations
- Punctual or person-targeted incentives

*i. Incentives arising from the devolution process but that depend on the conservation organisation to be effective*

These incentives are related to the rights newly transferred. They are classified as an incentive transmitted by the conservation organisation because, at the time the contract is being set, legitimacy of Local Community is not sufficient for its rights to be recognised by others thus the certainty of local Community about its rights depends on the support of the conservation organisation to enforce them.

Moreover, this category refers to the exclusivity of the rights recognised to local population. This exclusivity is considered important by local population as it limits the possibility of migrants to settle on its area. Therefore obtain exclusive rights on its area is an incentive for Local Community to control practise of forest burning by outsiders. This is of mutual interest, the conservationist association, which therefore supports Local Community to enforce its rights.

For one of the studied villages, this type of incentives have been enhanced by attributing a small part of the protected area to the Local Community.

*ii. Incentives through project actions to compensate for clearing forest interdictions*

These incentives can be of different kind, irrigated rice development, dam construction . The effect of these actions on conservation path are not discussed here, in Andapa, several of them have proved short-termed, destructed by a cyclone.

Having said that, these actions are stressed as incentives here because they greatly contribute to shape the image of the conservation organisation.

These kind of incentives can be directly provided by the conservation organisation or realised by other organisations but in that case it is often the conservation organisation that links Local Community with the other organisation in charge.

iii. *Punctual or person-targeted incentives*

In this last category fall varied incentives, from formations proposed to the Local Community representatives till financial participation to the celebration symbolising engagement in the Gelose contract...

Again the utility of these actions are not contested, they are stressed here because they contribute to shape population 's vision about the conservation organisation.

B Implications of the relation between the Intermediary and the Agent on rule design:

This part is constituted of two propositions, respectively presented with factual argumentation. These propositions are intermediate steps that will lead to the conclusion.

**Proposition 1:** *Even if conditions are made for local population to participate to the design of new rules, their effective policy space appears very restraint in front of potential stakes associated to the international donor agency image. Therefore the mediation, assumed to guide the design of collective rules, finally turns to a "proposition-acceptation" relation conferring to local formal rules aspects of external norms.*

Argumentation

To justify this proposition we will refer to one of the key rules designed in the contract : the rule that limits wood harvest to personal use.

According to that rule, it is now forbidden to sell wood, that has been harvested in the area concerned by the contract, to people who are not member of the Local Community. But, before the contract, selling wood to people of villages of the neighbourhood was current practice.

Investigations in different villages reveal various of that rules. We will first assess the effectiveness of the rule and then give possible explanation of why this rule has been accepted during the design of the contract rules even if it decrease revenues of a part of the population.

a) After the contract, what is the effectiveness of the new rule that forbid commercial use of wood ? To answer, two cases can be considered according to the context of the villages studied:

- In Belambo Lokoho, where the devolution process started in 1997, harvesters are many in the village, and most of them know about this rule. But, as wood harvests represents a source of revenue during slack periods, commercial exchange of wood with villages around continue.

- In Antsahameloka, the rule has proved effective but due to other external factors. A revealing fact: the President of the council established by Gelose contract to represent Local Community has been sanctioned twice because of illicit harvest in the “gelosed forest”! Most of the harvesters of the village go to practise this activity during two months in another forest where prices for wood are higher.

It results from empirical cases that a rule accepted during the contract making, may be effective if it constrains a minority of population of Local Community.

- b) Why the rule can appear collectively accepted during the contract design even if it decreases revenue of a part of the population?

To answer, we will first consider Local Community as a whole and then distinguish local interest groups as Local Communities are often constituted by people with differentiated statutes<sup>12</sup>.

Considering Local Community as a whole, it already has been noted that potential opportunities associated with the international donor agency indirectly limits considerably policy space of Local Community to design local rules. Moreover, rule acceptance at first stake can be seen as a strategy for Local Community consisting in sign the contract that ensure a future revenue and decide later to respect or not.

Moreover, separate people according to their social statute, shows that, the new rule on harvesting *constraints the part of the population who is the least influent*.

Effectively, harvesters are generally people who don't have much land and for whom harvesting is a way to complete insufficient revenues from cultures. Thus they often are the migrants or the young people, and can also correspond to people who are the least well-read and thus who little take part to the design of rules.

It works the same for the rule concerning forest burning to cultivate. The people more concerned are those who have little land and these are often the least influent in the village. But for people who own irrigated fields or people who have enough land to rent it, and that are generally influent people, this rule increases land market pressures and thus, in the short term, reinforce the value of their own land. Thus they could even constraint the others not to practice tavy. (Maldidier 2001)

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<sup>12</sup> (Leach, Mearns and Scoones 1999)

Before arguing for the second proposition, it is necessary to recall that Gelose policy implementation requires an “environmental mediator” whose role is to conduct a patrimonial approach with population.

**Proposition 2:** *the role of mediator in conflict solving is played by the conservation organisation agents rather than by formal mediators required to establish a Gelose contract. And, rather than conduct a patrimonial approach, the informal mediators accommodate three types of interests: interest of the Principal, interest of Local Community and its self-interest.*

#### Argumentation

Several reasons can be set to justify proposition 2:

- “informal mediators” (agents of WWF-Andapa) are better known by local population than formal Gelose mediators. The latter are sometimes viewed as a formality to respect required conditions for Gelose contract (Antsahameloka); whereas informal mediators are often called to facilitate conflict solving even after the establishment of the contract.
- Moreover, formal mediator finally have mostly an operational role ((Maldidier 2001)): they realise forest inventory and other tasks to replace Waters and Forests agents that generally do not want to involve in the process.
- Then, even formal mediator are frequently considered by local population people belonging to the conservation organisation (they are driven in their car...). And it can be the case, because quite often the formal mediator is waged by the conservation organisation.
- Finally, here is an example that justify why informal mediators could be seen as accommodating three types of interests: the case of a WWF agent that became Mayor after having been involved in the Gelose process.

### **2-3 Consequences of the model for the institutionalisation of rules**

It might be a bit early to assess consequences of the model on the institutionalisation of rules as institutional change is rather a long process.

But considering both precedent propositions, the model seems to valid the following one: *engagement of Local Community in the formal arrangement implemented, seems finally more dedicated to maintain the relation instituted with the conservation organisation rather than a purpose to manage the forest on which she would have gained new management rights.*

A way to justify this proposition would be to observe the evolution of tavy practices: as tavy remains a strategic practice to secure revenue of most of people, it persists but might

be more discrete (for example far from roads and not visible to conservation agents or to Waters and Forests agents). Yet, the link between evolution of tavy practice and devolution of rights is far from being obvious: external factors also influence, such as vanilla prices, or the fact that the observable rain decrease reinforces the conservation organisation discourse about deforestation.

To conclude, we will first discuss on the role of the conservation organisation as a determinant or not for institutional change. Then emphasis will be put on the arbitration system as a way to analyse possibilities for the Local Community to make its rights recognised and thus for the system to recover the initial incentive structure that found it.

## **Discussion**

### **1 About institutional change: Is decentralisation reform in Andapa region conditioned to the attention paid by the conservation organisation to local communities concerned ?**

First, a pessimistic and myopic view would answer yes. Effectively, right after the implementation, the Village Council motivation to institutionalise new rules appears high in regard to the regularity of harvesting permits registered and control of the area.

But at that stage, WWF-Andapa has a central role in co-ordinating different units of the co-management system established, especially between the Local Community (organisation that controls its area but faces a lack of legitimacy to make its rights recognised) and Waters and Forests agents (organisation that has authority but ineffective control). This coordination is made difficult by the fact that these two organisations do not have incentive to complete each other: infractions controlled by the Village Council are those that Waters and Forests agents won't get revenue on; inversely the Village Council has little expectation to perceive fines from sanctions verbalised by Waters and Forests Agents.

Therefore in the period following the implementation, WWF-Andapa acts as an enforcement institution.

But as this role tends to erode, Village Committee motivation showed a decrease (regularity of registration already decreased after only one year).

On the other hand, a more optimistic view shows room for the system to adapt. Effectively, in spite of the relation identified by the precedent model, the devolution process constitutes great progress for the pilot-sites studied, where information has been well spread. Although the established contract is assumed to be fixed for three years, people currently

discuss about rule innovations or adaptations. Therefore, if Local Community 's policy space appears "étroite" during the design of formal rules, it increases after. Local Community can take advantage of the informational asymmetry to enlarge its rights, as long as she can make them recognised if needed.

Moreover, the role of the organisation in charge of implementation evolves, it leaves more space to the formal stakeholders. For example, Municipalities reveal a growing implication in the system<sup>13</sup>. Therefore, there are possibilities for more local rules to be crafted.

## **2 Focus on the arbitration system to emphasise on governance arrangements that protect the local community rights**

As it has been shown, Local Community motivation to institutionalise new rules rests on two sources:

- the informal relation arising with the conservation organisation;
- the incentive generated by transfer of exclusive management rights.

For its viability, the co-management system should refer only to the second type of incentive. But a necessary condition for this incentive to be effective, rests on the certainty of Local Community about its rights and to governance arrangements that exist to protect transferred rights. According to (Agrawal and Ostrom 2001), « *The outcomes associated with the decentralisation of different levels of property rights depend in significant measure on the certainty of users about their rights and the nature of governance arrangements to protect users' rights.* ». This justifies to focus on the arbitration system as a way to envisage determinants of institutional change.

First investigations showed that the arbitration system is flexible. That is, each case is solved in a different way and at a different level (from the possibility to be solved at the level of Village Council to the need to mobilise either the municipality, or Waters and Forests services authority through the conservation organisation).

*Whereas this flexibility should facilitate the arbitration system (via subsidiarity) and thus enhance certainty of Local Community about its rights, a different scenario threatened the mechanism: flexibility of the system favours people who can escape from enforcement of Local Community rights thanks to economic or political positions.* In turn, this free-rider problem decreases Local Community motivation to institutionalise collective local rules.

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<sup>13</sup> For example, one of them proposes to "nature" sanctions rather than fines through public interest works. Another one already formalise a Municipal convention with similar but less defined rules as in Gelose contract.

## Conclusion

This article aimed at analysing ways by which the global value of biodiversity can interfere with local decision making. It emphasised on the role played by a conservation organisation in the decentralisation of natural resources management to local communities. We used a Principal-Agent model with an intermediary level, as a positive tool (and not normative), to explore the informal relation arising between the international donor agency in charge of implementation and the local community concerned.

Given that the policy process implemented is made official by a tripartite contract including the Local Community, the Municipality that LC is administratively linked to, and Waters and Forests services, it results from the model that : *the conservation organisation in charge of implementation plays a key role in the system it establishes and in which it does not constitute a formal stakeholder. This is due to the relation arising between the conservation organisation and local community that interacts on the institutionalisation of rules.*

To argue it is necessary to go back to the initial policy process. The initial policy process should have led to a system in which Local Community acquires « exclusive management rights » and therefore has incentive to concretely involve in rule making and to control these rules.

But as rules designed in contracts implemented in Andapa region are externally influenced, control over these rules is not inherent to the system. Therefore one could argue that the system would function as long as the conservation organisation compensates with other types of incentives...

But another possible view, undertaken by a dynamic approach to institutional change, reveals that after the implementation of the policy process, the conservation organisation 's role evolves and leaves more space to formal stakeholders. Therefore, despite the relation identified by the model, there may be still room for the system to adapt and institutional change to occur. And a way for the system to recover its initial incentive structure, that is based on devolution of exclusive management rights, would be to emphasise the possibility for local Community to make its rights recognised.

Local Community motivation to institutionalise new rules would then depend on the certainty about its rights.

Finally, analyse of the arbitration system and interest groups involved would help us to analyse possibilities or obstacles to the emergence of governance arrangement to protect Local Community rights. For example, concerning the growing role of Municipality , two opposite hypotheses should be tested:

- implication of Municipality to institute a sharing system of fines with the Village Committee in exchange of support for authority and thus effective devolution reform.
- Structuration of local administrative powers that orient rules in a way to appropriate rent and contribute to return to prior situation, that is, a system in which the administration does not have the capacity of its policy, and constitute obstacle for Local Community to craft and institutionalise rules.

Considering that path change will be influenced both by the administrative decentralisation and by local ONGs that currently constitute to anticipate the retirement of the conservation organisation, a model analysing horizontal interrelations and repartition of gains and costs would be a pertinent tool to complete our previous vertical model and give a dynamic and positive analysis of institutional change.

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