

Satoguina, Honorat

Working Paper

Concept of Regional CDM Approval Body – Bundling Designated National Authorities: Case of West African Economic and Monetary Union – A Public Choice Analysis

HWWA Discussion Paper, No. 352

Provided in Cooperation with:

Hamburgisches Welt-Wirtschafts-Archiv (HWWA)

Suggested Citation: Satoguina, Honorat (2006) : Concept of Regional CDM Approval Body – Bundling Designated National Authorities: Case of West African Economic and Monetary Union – A Public Choice Analysis, HWWA Discussion Paper, No. 352, Hamburg Institute of International Economics (HWWA), Hamburg

This Version is available at:

<http://hdl.handle.net/10419/19381>

Standard-Nutzungsbedingungen:

Die Dokumente auf EconStor dürfen zu eigenen wissenschaftlichen Zwecken und zum Privatgebrauch gespeichert und kopiert werden.

Sie dürfen die Dokumente nicht für öffentliche oder kommerzielle Zwecke vervielfältigen, öffentlich ausstellen, öffentlich zugänglich machen, vertreiben oder anderweitig nutzen.

Sofern die Verfasser die Dokumente unter Open-Content-Lizenzen (insbesondere CC-Lizenzen) zur Verfügung gestellt haben sollten, gelten abweichend von diesen Nutzungsbedingungen die in der dort genannten Lizenz gewährten Nutzungsrechte.

Terms of use:

Documents in EconStor may be saved and copied for your personal and scholarly purposes.

You are not to copy documents for public or commercial purposes, to exhibit the documents publicly, to make them publicly available on the internet, or to distribute or otherwise use the documents in public.

If the documents have been made available under an Open Content Licence (especially Creative Commons Licences), you may exercise further usage rights as specified in the indicated licence.

**Concept of Regional CDM Approval
Body – Bundling Designated National
Authorities: Case of West African
Economic and Monetary Union –
A Public Choice Analysis**

Honorat Satoguina

HWWA DISCUSSION PAPER

352

Hamburgisches Welt-Wirtschafts-Archiv (HWWA)
Hamburg Institute of International Economics

2006

ISSN 1616-4814

Hamburgisches Welt-Wirtschafts-Archiv (HWWA)
Hamburg Institute of International Economics
Neuer Jungfernstieg 21 - 20347 Hamburg, Germany
Telefon: 040/428 34 355
Telefax: 040/428 34 451
e-mail: hwwa@hwwa.de
Internet: <http://www.hwwa.de>

The HWWA is a member of:

- Wissenschaftsgemeinschaft Gottfried Wilhelm Leibniz (WGL)
- Arbeitsgemeinschaft deutscher wirtschaftswissenschaftlicher Forschungsinstitute (ARGE)
- Association d'Instituts Européens de Conjoncture Economique (AIECE)

HWWA Discussion Paper

Concept of Regional CDM Approval Body – Bundling Designated National Authorities: Case of West African Economic and Monetary Union – A Public Choice Analysis

Honorat Satoguina

HWWA Discussion Paper 352
<http://www.hwwa.de>

Hamburg Institute of International Economics (HWWA)
Neuer Jungfernstieg 21 - 20347 Hamburg, Germany
e-mail: hwwa@hwwa.de

This paper has been prepared within the research Programme “International Climate Policy” of HWWA

This Version: October, 2006

Edited by the Department World Economy

HWWA DISCUSSION PAPER 352
Oktober 2006

Concept of Regional CDM Approval Body – Bundling Designated National Authorities: Case of West African Economic and Monetary Union – A Public Choice Analysis

Abstract

In the Marrakech Accords, the international community established a complex set of rules for the CDM, including a project cycle, indicating certain important responsibilities for the host developing countries such as the approval of CDM projects. Hence, countries have to establish their approval body, which is the Designated National Authority (DNA). In addition, most of the studies and discussions on the DNA structures in Latin America and Caribbean and Indonesia have revealed the DNAs' inability to be financially supported by the developing host countries. However, the Marrakech Accords did not specify that the DNA must not be created at national level. Hence, to reduce transaction costs to DNAs, it could be possible to create a regional CDM approval body. The current study suggested this concept between the West African Economic and Monetary Union (WAEMU) countries' which are just in the process of establishing their DNAs. In addition, based on the new political economy, DNA stakeholders' behaviour has been analysed. The study concluded that the regional approval body is economically defensible and represents the social optimum which maximises social welfare.

Moreover, until now all the discussions on the DNA have been carried out at the national level. It has never been an attempt to discuss the CDM institution building at the regional level. Hence, this study is an attempt to fill the gap. Based on the results, this study proposes innovatively to establish a joint Approval Body among countries with limited CDM potential.

Keywords: Designated National Authority, architectural design, CDM institution building, regional CDM approval body, transaction costs, economies of scales.

JEL classification: F5, F53, Q01, Q28, Q56

Address for correspondence:

Honorat Satoguina
Programme International Climate Policy
Hamburg Institute of International Economics
Neuer Jungfernstieg 21, 20347 Hamburg
Germany
Phone: +4940 42834 349
Fax: +4940 42834 451
honorat.satoguina@hwwa.de , until 31. 12. 06 and after: hsatoguina@hotmail.com

CONTENTS AND OVERVIEW

Abstract	I
Contents and overview	III
List of Figures	IV
List of Tables	IV
1 Scope and structure of the Study	1
2 Transaction costs of establishing and running a Designated National Authority	2
2.1 Political transaction costs	2
2.2 Measuring Transaction costs	3
2.2.1 Fixed costs	3
2.2.2 Variable costs	3
3 Structural possibilities of DNA	4
3.1 Theoretical forms of DNA	4
3.1.1 UNFCCC focal point as DNA (A)	4
3.1.2 Environmental Impact Assessment body as DNA (B)	4
3.1.3 FDI-Piggyback model (C)	4
3.1.4 Single government department model (D)	5
3.1.5 A two-unit model (E)	5
3.1.6 Interdepartmental government model (F)	5
3.1.7 Outsourcing model: Shifting functions to NGOs (G)	6
3.1.8 Summary of the existing DNA models	6
3.2 Empirical evaluation of existing DNAs structures: experience in LAC countries and implication for bundled DNAs	7
4 Scenario 1: Large DNA with far reaching competencies	9
4.1 Tasks	9
4.1.1 Development of national sustainability criteria	10
4.1.2 Elaboration of guidelines for the presentation, evaluation and approval of projects	11
4.2 Costs implications: Empirical Transaction costs	14

5	Scenario 2: Minimum size DNA that just does rubber-stamp approval	17
5.1	Tasks	17
5.1.1	Project approval	17
5.1.2	Staffing	18
5.2	Transaction costs implications	18
6	Bundling DNAs - Regional Approval Body (RAB) option to reduce transaction costs: Utilisation of the West African Economic and Monetary Union	21
6.1	Bundling DNA and the rationale of a WAEMU level approval body concept	18
6.2	The West African Economic and Monetary Union	19
6.2.1	The main aims of the WAEMU	19
6.2.2	Organisational structure	20
6.2.3	Analysis of working structure of the Commission of the WAEMU	21
7	Regional approval body based on the WAEMU structures: the concept	22
7.1	Rationale of the regional approval body concept	25
7.2	Desired features of the regional approval body for WAEMU membership	27
7.2.1	Structure of regional approval body: all competence at WAEMU	27
7.2.2	Cost implications	28
7.3	Cost saving of the regional Approval Body	29
8	Stakeholders' behaviour: Public Choice explanation of possible DNA members' behaviour	30
8.1	Methodology	30
8.2	DNA members and their utility function	32
8.2.1	Regional approval body's members	32
8.2.2	National DNA members	37
8.3	Analysis of stakeholders' interest in the regional and national NDA options	40
8.4	Incentive for ministries representatives	41
9	Conclusions	43
	References	45

Appendix: Details on DNA transaction costs assessment	49
Appendix 1: DNA cost details at country level	49
Appendix 2: DNA cost details at regional level	50

List of Figures

Figure 1: Regional DNA Structure	23
Figure 2: Economies of scale with regional CDM institutions	26
Figure 3: Utility maximisation by the regional secretariat	35
Figure 4: Utility maximisation by the regional secretariat under imposed number of participants	36

List of Photos

Photo: WAEMU Members countries	20
--------------------------------	----

List of Tables

Table 1: Evaluation of existing DNA models	6
Table 2: Institutional Location of DNA	8
Table 3: National stakeholders	15
Table 4: Projected costs for running the national DNA	17
Table 5: Projected costs for running the regional approval body based on 8 countries and 8 projects per year	29
Table 6: CER costs comparison between national and regional options	30
Table 7: Stakeholders interest comparison and impact on social optimum	41

1 SCOPE AND STRUCTURE OF THE CHAPTER

In the Marrakech Accords, the international community established a complex set of rules for the CDM, including a project cycle, indicating certain important responsibilities for the host developing countries such as the national approval of CDM projects. Hence, countries have to establish their approval body, which is termed the Designated National Authority (DNA). The DNA's importance lies in the fact that it is the link between a host country and the international CDM Executive Board. Moreover, its approval means that a CDM project is in accordance with a country's development policy. In fact, the countries in the West African Economic and Monetary Union are just in the process of establishing their DNAs, of which, apart from Guinea Bissau and Togo, the six remaining countries of the WAEMU have notified their DNAs to the CDM Executive Board.¹

Most of the studies and discussions on the DNA structures in Latin America and Caribbean have revealed the DNAs' inability to be financially supported by the host developing countries (Figueres and Olivas, 2002). Similar studies done in China, India and Indonesia came to the same conclusion (Michaelowa 2004). These countries are still looking to additional foreign funding for support. Thus host countries should provide an adapted DNA design in order to reduce the transaction costs (Figueres, 2002).

Moreover, until now all the discussions on the DNA have been carried out at the national level. There has never been an attempt to discuss the CDM institution building at the regional level. Hence, this study is an attempt to fill the gap. Based on the results, this study proposes innovatively to establish a joint DNA among countries with limited CDM potential. The rationale of this option is that bundling the DNA leads to reduction in transaction costs related to the CDM institution building and operation. Since the scope of this study is to analyse possibilities of transaction costs reduction at the DNA level, the study will not consider transaction costs linked to the whole CDM project cycle, but only with respect to the DNAs. As a DNA is an institution that needs to be created, managed, maintained, updated, and fed with information to carry out its work, the study defines transaction costs as the costs of resources utilised for the creation, maintenance, use, change and all such related costs typical of institutions and

1 See: <http://cdm.unfccc.int/DNA> .

organisations. Based on this, DNA transaction costs could be divided into fixed and variable costs.

This study is structured as follows: the DNA transaction costs will be first discussed (section 2), followed by the theoretical forms of a DNA and the related transaction costs (section 3). Thereafter, sections 4 and 5 discuss the issues relating to the two DNA scenarios and the costs involved. Section 6 and 7 present and analyse the concept of the regional DNA, its rationale, and suggests a suitable option to the WAEMU countries. Section 8 makes the public choice analysis of DNA members and section 9 presents concluding words and recommendations.

2 TRANSACTION COSTS OF ESTABLISHING AND RUNNING A DESIGNATED NATIONAL AUTHORITY

In a broader sense, a transaction is defined as an act of the exchange of goods (Coase 1960; Williamson 1991). In recent years, a huge amount of literature on transaction costs (TAC) from different disciplines has been developed. For more information on the main issues addressed in the theory of transaction costs and determinants of transaction costs see Furubotn (2000), Williamson (1991), (1993), (1996) and Coase (1960). For the purpose of this research, a transaction is defined as either a group of processing steps that is treated as a single activity to perform a desired result, or a set of operations for which it is important that all succeed or fail (Soares 2004), and transaction costs are costs that arise due to the existence of an institution, in other words institutional costs (Cheung, 1992).

Since the study deals with transactions at the level of DNA², it is important to specify DNA transactions. The DNA transaction could be defined as the activities of setting up and professionally running the DNA. Thus the concept of political transaction cost becomes key, which is described below.

2.1 Political transaction costs

Political transaction costs are the costs of setting up an institutional framework in which transactions take place (Furubotn and Richter, 1991). Thus, political transaction cost of a DNA is the cost of the theoretical framework for a professionally performed task. Two categories of political transaction cost can be distinguished:

² For transaction costs to the whole CDM cycle, see Krey (2004).

The cost of establishing, maintaining and changing a system's formal and informal political organisation are the so-called development costs (Banuri and Gupta, 2001, p. 52). These TAC could be considered as information exchange costs and could appear before and after a structure had been set up. Thus, we have "ex-ante" TAC which encompass information, negotiation and contract costs (Woerdman 2002, p. 218).

Institutions incur running costs till the costs of their updating (Woerdman 2002, p. 218). These cost categories can be extended to ex-post TAC, which concerns control, adaptation of contracts to new environment or new constellation, monitoring and enforcement cost. With respect to a DNA, these costs could be referred to as fixed costs and variable costs. This study will show how this cost category could be reduced through a regional or bundled DNAs (see section 7).

2.2 Measuring Transaction costs

The assessment of a DNA's transaction costs is based on well-known definitions. The research does not assess the costs of the whole CDM project cycle.³ Thus, transaction costs of DNA are fixed costs and variable costs that accrue from setting up and professionally running a DNA.

2.2.1 Fixed costs

A large share of the costs of running the DNA is fixed. *Fixed costs* include outlays for setting up the secretariat of the DNA. These costs include, inter alia, wages for DNA members, office rent and office equipment costs. Hence, the amount of the fixed costs will depend on the number of persons that compose the DNA and the office and equipment cost. They will remain constant as long as the original DNA structure is not changed. These costs will likely be saved in the regional approval body option. Furthermore, variable costs will accrue during the DNA activities.

2.2.2 Variable costs

Additional costs will arise for the meetings needed to define sustainable development criteria and procedures for project approval, in other words, when special stakeholder forums are called. In addition, costs will accrue when DNA members make auditing trips to facilities. Likewise, travel costs of the DNA members to participate in climate

³ For CDM project cycle, see chapter 2.

change negotiations, conferences and different events related to their better operation will be incurred. Moreover, it has been foreseen by the CDM Executive Board (EB) that through repetitive similar project procedures, transaction costs should be reduced. Understandably, this is verified only in regarding fees to be paid to the CDM EB. Nonetheless, the DNA needs to examine project conformity to approved methodologies. In effect, for strictly similar projects, some steps of the verification procedure should be avoided. Nevertheless this will not affect the overall variable costs to a significant degree. Obviously the frequency of the meetings and DNA members' participation in regional and international events will increase the DNA's overall outlays. For these reasons, it is basically important to conceive this cost item as a cost saving DNA structure.

3 STRUCTURAL POSSIBILITIES OF DNA

In the literature seven approaches of developing a DNA have been pointed out, which will be analysed in the following section. In addition, the models which are suitable for avoiding conflicts and reducing costs at a regional approval body level are particularly highlighted and analysed.

3.1 Theoretical forms of DNA

The letters A,B,C,D,E,F,G are used here simply as a sign to label the models for the discussed structure.

3.1.1 UNFCCC focal point as DNA (A)

Since almost all countries have a UNFCCC focal point, the outcome of an option to address the DNA establishment difficulties in countries with limited CDM potential is that the focal point becomes the DNA. With the development of CDM activities, external consultants can be commissioned (Michaelowa, A., 2003). With respect to this option, there are no fixed costs as the focal point already exists, while the variable costs depend on the costs of the consultants compared to the government staff costs. Of course, the variable costs defined previously in section 2.2.2 will be reduced with respect to costs of participating in the climate change negotiations, as these costs are supported by the UNFCCC Secretariat for focal point members from the developing countries.

3.1.2 Environmental Impact Assessment body as DNA (B)

The use of the environmental impact assessment (EIA) body whereby one adds a GHG component to play the role of the DNA (Michaelowa, A., 2003; Ellis et al., 2004) is a useful suggestion. This option will certainly help monitor project impacts after implementation, an aspect which is not covered by the CDM current rules. In this option, the fixed costs are saved, while the variable costs will depend on the staff characteristics and training needed.

3.1.3 FDI-Piggyback model (C)

This model is based on the fact that in most of the countries, a foreign direct investment (FDI) framework that promotes foreign investments exists. This framework comprises two separate offices - one for promotion and the other for project approval. This framework could be adapted to play simultaneously the role of the DNA (UNEP 2004, p. 42). Given the specific aspects of the CDM, a relevant expert group should be formed by the investment office to deal with these issues. With respect to this option, the fixed costs could be saved, while the variable costs depend on the structure of the office that will play the DNA role and the skills needed.

3.1.4 Single government department model (D)

One department or ministry is responsible for all CDM activities and a unit within the ministry represents the DNA. The ministry may collaborate with other ministries and expert groups regarding specific issues.⁴ Two important criticisms should be mentioned here regarding the case study countries. First, the collaboration between ministries is not always easy. Pursuing their own interests, the representatives of different ministries complicate and lengthen the entire process. Second, the costs linked to the institution building and the DNA will probably not be provided by governments in the developing countries as shown in the Latin American and Caribbean cases (Figueres, 2002). With respect to this model, apart from office rent costs, the fixed costs will arise unless the DNA staff is formally allocated to a government office, while the variable costs will rather increase.

4 The model used in Chile, Dominican Republic, Honduras, Mexico, Ecuador, St Lucia, Trinidad & Tobago could be assimilated to that model.

3.1.5 A two-unit model (E)

In this model, one department is in charge of the regulatory function of the DNA, most probably a department dealing with sustainable development. It should evaluate projects and grant the host country approval. A different department is in charge of investment development, developing a portfolio of CDM projects for marketing to investors and organising capacity building⁵ (UNEP, 2004, p. 41). Since the two roles are well separated, conflicts of interest could appear in the sense that the department whose activities require more financial means will be perceived by the other department as profiting from the process. These could naturally lead to a blockage of activities. For this reason, this issue needs to be addressed seriously at the beginning. As far as cost issues are concerned, fixed costs and variable costs will arise as there are two agencies.

3.1.6 Interdepartmental government model (F)

A committee built up from relevant governmental departments could be set up to approve projects.⁶ Again, a problem of conflicting interests can arise here. Moreover, it will be difficult to identify the one making the decisions. Ministries will be fighting for this role for a long time, especially in the developing countries where any climate change related activity is viewed as a revenue-increasing opportunity. Hence, this DNA model will lead to high variable costs.

3.1.7 Outsourcing model: Shifting functions to NGOs (G)

In this model, the DNA function is entrusted by the host country to a private agency, which is responsible for evaluating and validating the projects. That is the case in Costa Rica. The private agency reports to a government agency that plays the role of the DNA, approving projects. The host country's government will issue the final letter of approval. If this model is a solution to avoid the non-consensus between ministries, it presents the advantage of low set-up costs, but it is costly for each CDM project (UNEP, 2004, p. 42). Indeed the local experts need capacity development for CDM. Moreover project assessment costs must be paid. In addition, whether the government agency that plays the role of a DNA will not claim any supplementary charges is questionable. In all cases, the funding question remains the main challenge. In this model, the fixed costs will likely increase compared to the other models as the private

5 The Peruvian model should be assimilated to that model.

6 The Brazilian model should be assimilated to that model.

company will set up its own assessment office, while the variable costs depend on the capacity needed and are not likely to be increased as the private company will take over the whole activities related to variable costs.

The results of the evaluation of the current DNA structures are summarised in the table 1 below.

3.1.8 Summary of the existing DNA models

From the table, it is obvious that the fixed cost as well as variable costs will not be saved. In fact they remain at least the same or may even increase. Based on the above discussion on the different forms of DNA, it is not clear how the DNA financing issue can be addressed. Since the costs faced by a DNA will depend on various scenarios, we will discuss two possible scenarios before addressing the issue of a suitable DNA structure (section 7.2). Before that, we will do an evaluation of the current DNAs structures in the Latin America and Caribbean (LAC) countries.

Table 1: Evaluation of existing DNA models

DNA options	Fixed costs	Variable costs
UNFCCC focal point as DNA (A)	Zero	Zero (if no projects), high (if many projects)
Environmental Impact Assessment body as DNA (B)	Zero	Zero (if no projects), high (if many projects)
FDI-Piggyback model (C)	Zero	Zero (if no projects), medium (if many projects)
Single government department model (D)	Medium	Zero (if no projects), high (if many projects)
A two-unit model (E)	High	Zero (if no projects), medium (if many projects)
Interdepartmental government model (F)	Medium	Zero (if no projects), high (if many projects)
Outsourcing model (G)	High	Zero (if no projects), low (if many projects)

Source: Own table.

3.2 Empirical evaluation of existing DNAs structures: experience in LAC countries and implication for bundled DNAs

The majority of the LAC countries have been involved in the Joint Implementation pilot phase during the '90s. The experience gained during this phase made them, in fact, pioneers of the CDM institution building. For this reason the DNA structure will be evaluated in the context of the LAC countries.

Due to the fact that most privately run Activities Implemented Jointly (AIJ) offices were not able to sustain the financing of their activities, all DNAs in the LAC countries are public entities except for one country, Costa Rica, where it has been outsourced

(Figueres, 2002; Figueres and Olivas 2002). Guatemala gave up its mixed structure in late 2005, The rationale behind this is that since governments in developing countries could not provide supplementary funds to perform the current CDM activities, bureaucracies without any supplementary costs should take on the work as part of their current activities. But in reality, the CDM-related activities are new and require supplementary skills which the bureaucracies do not possess. For these reasons, the government-linked DNAs were unable to perform the new tasks properly. Therefore, such a DNA structure does not function successfully.

With the exception of Brazil and Jamaica which have a DNA model similar to the interdepartmental government model, all other 17 DNAs have a structure similar to a single government department model (see table 2) where the DNA is a unit created within the ministry of environment and/ or natural resources. In the countries affected with (D)*, the ministry itself is the DNA. In Brazil the DNA is composed of representatives from several ministries. While this public sector DNA assumes the task, financial issues remain a challenge. Moreover, the location of DNAs in ministries reduces their ability to interface effectively with economic development actors for the following reasons: a) the environmental offices are typically one of the weakest in the governmental structures, b) the private sector is unwilling to adhere to rules and regulations which are enforced by environmental agencies, c) the DNAs do not have an economic or entrepreneurial approach to their operations. Thus they are not considered natural partners of the private sector or other governmental agencies (Figueres and Olivas, 2002). To overcome these difficulties, the LAC countries have either integrated an executive board or an advisory board. The executive board is a permanent organ, which deals with current issues of the DNA, while the advisory board is a non-permanent organ that meets only when specific consulting is needed. The rationale of this separation is to limit the fixed costs of the DNAs. In addition, most of the time, development issues and climate change are not concerns of only one ministry. Any ministry that has some link to environment, development, economic, co-operation, foreign affairs, agriculture, energy, etc will claim that CDM requires their attributions. To solve this conflict, the DNA usually comprises representatives from almost all ministries.

Table 2: Institutional Location of DNA

Country	DNA Location	Structure type
Argentina	Environment Ministry	(D)
Bolivia	Environment Ministry	(D)
Brazil	Science & Technique	(F)
Chile	Environment Ministry	(D)*
Colombia	Environment Ministry	(D)
Costa Rica	Costa Rican Office on Joint Implementation	(D)
Dominican Republic	Environment Ministry	(D)*
Ecuador	Environment Ministry	(D)*
El Salvador	Environment Ministry	(D)
Guatemala	Independent	(D)
Honduras	Environment Ministry	(D)*
Jamaica	Environment Ministry, Resource council	(F)
Mexico	Environment Ministry	(D)*
Nicaragua	Environment Ministry	(D)
Panama	Environment Ministry	(D)
Paraguay	Environment Ministry	(D)
Peru	Environment Ministry	(D)
St Lucia	Environment Ministry	(D)*
Trinidad & Tobago	Environment Ministry	(D)*
Uruguay	Environment Ministry	(D)

D*: the ministry itself is the DNA.

Source: Adapted from Figueres, (2002)

In all 20 LAC countries, with the exception of Costa Rica, DNAs are public entities (Figueres and Olivas, 2002). In 12⁷ of these countries, the DNA is composed of ministry representatives exclusively; in 6⁸ others the DNA is a mixed advisory board from the public and private sectors, NGOs and academia. In countries like Brazil this board is a mix of several public agencies with potential interest in GHG mitigation activities.⁹ Conversely, certain countries have a board beyond the public sector, including representatives from the productive private sector, NGOs, and academia. This is the case in Argentina, Ecuador, Mexico, Nicaragua, and Uruguay (Figueres and Olivas, 2002). But clearly, even if the opening of the DNAs to a larger number of members allows the involvement of highly qualified people, the role of these personnel is limited to advising the DNA on the implementation of the CDM, including methodologies and project identification. In addition, it was obvious that most DNAs in the LAC countries are mainly financed by international donors¹⁰, whose objectives are the institutionalisation of the DNAs and the development of prospective CDM projects.

7 This is the case in: Bolivia, Chile, Colombia, Dominican Republic, El Salvador, Guatemala, Honduras, Mexico, Panama, Paraguay, Peru, St Lucia and Trinidad and Tobago.

8 These countries are: Uruguay, Argentina, Costa Rica, Ecuador and Nicaragua.

9 For more details, see Figueres and Olivas (2002).

10 UNDP/GEF, UNEP/RISO

Clearly, due to a higher economic development level in the LAC countries compared to the West African countries in general, the LAC countries have a greater CDM potential. Moreover, based on the experience gained during the JI pilot phase, they are more competent to process CDM projects assessment compared to the West African countries. Consequently, the LAC countries will need less support from donors compared to the West African countries. This might be an incentive for donors to support LAC countries' DNAs.

From the experience of the existing DNAs in the world, it appears that two structures dominate DNAs: The first type is a two-tiered structure with a permanent secretariat based on limited personnel that deals with the DNA's daily operational activities and a committee or office (with government representatives, private sector representatives and NGOs) that meet periodically to decide on rules and procedures to approve CDM projects. The second type of structure is a single office with a combination of representatives from the public sector and others.

Obviously, the first type offers a possibility to reduce fixed costs as only a small permanent secretariat will incur on-going costs, while the large committee will be paid attendance fees. In contrast, the second option will lead to a large number of personnel, lengthy procedures and consequently higher fixed and variable costs. Nonetheless, almost all DNAs based on these two structures lack the financial stability to carry out their responsibilities in a sustained manner (Figueres and Olivas, 2002). In this case, preference is given to the least cost option: the two-tiered. This is the rationale behind the crystallisation of the DNAs on the two-tiered structure. The funding provided by donor countries is actually only limited to the creation of a framework that makes it possible to earn emission reductions but does not go beyond that. For cost saving reasons, the two-tiered structure will be analysed further and an adaptation is made to the regional approval body concept in section 7.

Since the costs faced by a DNA will depend on individual scenarios, we will discuss the two possible scenarios before addressing the issue of a suitable DNA structure.

4 SCENARIO 1: LARGE DNA WITH FAR-REACHING COMPETENCIES

4.1 Tasks

In the discussion on the DNA structure, it has always been argued in the literature that a DNA could optionally be large and cover several activities. The argument for this proposal is that it guarantees the functionality of the DNA by providing systematically support through a rigorous program and funding assistance, as well as necessary skills to personnel involved in the different stages of activities designed under this type of DNA. The following section addresses such a DNA model.

4.1.1 Development of national sustainability criteria

After a long discussion on sustainable development, the Marrakech Accords decided that each country should be responsible for the definition of its sustainable development criteria. National criteria development is one of the main tasks of the DNAs. Hence the countries should develop national criteria and respective information requirements to ensure a coherent, justifiable and transparent assessment in accordance with the national interpretation of sustainable development. Furthermore, a country's interpretation of the linkages between global mitigation efforts and its national development priorities, as well as its willingness to utilise the national potential in carbon offset opportunities, may be reflected in specific national policies and decisions related to the CDM. In addition, a DNA should check several tasks (Figueres, 2004; UNEP, 2004) as follows:

- Compliance with relevant policy and regulatory regimes
 - National scope
 - Compatibility with national sustainable development objectives including economic, ecological and social dimensions.
 - Congruence with the national climate change policy and/or carbon offset strategy.
 - Eligibility of the project proposal according to a positive or negative list of eligible CDM activities. This could lead to technologies and/or sectors eventually adopted by the host country.

- Sectoral scope
 - Compliance with related political and legal framework:
 - Environmental impact assessment in accordance with procedures as required by the relevant sector
- Local scope
 - Compatibility with local priorities, as stated in local development agendas.
 - Comment by local stakeholders directly and indirectly involved in the project.
- Financial review
 - Excluding the use of official development aid for project funding.
- Technical and institutional feasibility
 - Infrastructure and technical capacity
 - Local availability of human resources
 - Local availability of adequate institutional resources
 - Transfer of technology and know-how
 - Description of the implications for the local enhancement.
 - Description of the implications for the national capacity building.
 - Description of technology transfer.
- Special consideration of other environmental and developmental impacts.
 - Additional environmental, socio-economic, technical and institutional benefits (and costs) that are considered relevant.

This long list of criteria gives each country certain flexibility in selecting the criteria by taking into consideration its specific requirements and transaction costs issues.

4.1.2 Elaboration of guidelines for the presentation, evaluation and approval of projects

4.1.2.1 Establish guideline for the presentation of projects

In order to facilitate project presentation by project developers, the DNA can design a document format for the introduction on the national criteria. This document will serve as a guideline for project developers in the presentation of projects. Indeed it needs to be consistent and transparent so that project developers are not subjected to confusing and changing formats for the presentation of their projects.

4.1.2.2 Establish national procedures for evaluation and approval of projects

Countries that need to attract CDM investment have to design quick and transparent procedures for screening, evaluating and approving projects. To reach these objectives, the CDM office should implement a standardised system of screening, evaluating and approving CDM projects (Figueres and Olivas, 2002; Figueres, 2002). Indeed countries with most transparent procedures will be in the best position to compete for CDM investment resources. One could expect competition between countries' institutions building. These would ultimately lead to the improvement of CDM institutions or DNAs in the host countries, which are one of the conditions investors are looking for. Screening can be divided into two phases: first, the primary screening that could be designed as simple as possible and merely aims at assessing whether all required data and information are contained in the project documentation. These tasks could be quickly done by a non-technical, mid-level staff (Figueres and Olivas, 2002, p. 67 ff.). In the practice, some countries have adopted the idea of Project Identification Note (PIN) and the Project Concept Note (PCN) introduced by the World Bank Program Carbon Fund (PCF). These consist of a format which organises the information required at this stage.¹¹ These two documents are not part of the Marrakech requirements but

11 The PIN, which is approximately 5 pages long, provides general information on the type, size and location of the project, the anticipated total amount of GHG emission reduction compared to the business-as-usual scenario, the suggested crediting life time, the suggested CERs price in €/per tonne CO₂ equivalent reduced, the financial structuring and the project's other social or environmental benefits.

As for the Project Concept Note (PCN), it is a more advanced format of the screening that is approximately 10-15 pages long and builds on the PIN. It provides information on the legal status and implementation capacity of the project sponsors and information on the sectoral policies within which the project will operate. Moreover, it presents more details on the baseline scenario and a summary of the risk assessment (Figueres and Olivas, 2002).

they are helpful tools in the evaluation process adopted by some CDM participants. Clearly DNAs are not obliged to adopt them. But if DNAs decide to use them, they must be adapted to the local needs and priorities.¹² Second, the secondary screening is a phase that concentrates more on whether the proposed project should be approved as an eligible CDM project with regards to sustainable development criteria. This secondary phase is more detailed and needs technical evaluation of the key factors and data associated with the project in respect of the established national and international criteria of proposed CDM projects. The purpose of this secondary screening is to somehow increase the probability of projects that are successfully validated and certified as CDM projects by the CDM Executive Board. For these reasons, qualified technical experts with carbon expertise in specific sectors in which the project will take place are required to perform the tasks. In addition, the secondary screening must be based on the Project Design Document (PDD) which is a final and complete description of the project.

4.1.2.3 Baseline and additionality check

The DNA may check additionality if the CDM EB's interpretation of additionality is weak and is against the DNA needs to achieve financial additionality and technology transfers. Obviously, all these checks will increase transaction costs.

4.1.2.4 Capacity building

A DNA should provide CDM capacity building in the following fields: 1) project identification formulation 2) baseline definition 3) quantification of emission reductions and 4) monitoring project performance.¹³ These are not mandatory tasks of a DNA, but it is definitely welcomed when a DNA participates in and administrates these tasks in order to ensure that the different parties involved in the CDM process have the required information to facilitate active participation. Hence, capacity building could be considered as an optional duty.

4.1.2.5 Marketing CDM projects

Due to the stiff competition in the international CDM market exclusively high quality CDM will compete in a restricted market. In order to maximise the possibility of projects being successfully marketed, a DNA should insist on the required high quality

¹² A sample of a PIN and a PCN are included in Appendix III.

¹³ For more details see Figueres and Olivas, (2002), pp. 70-72.

CDM project elements¹⁴ and make them available to potential national and international projects proponents. Of course in a restricted market, high quality alone is not a guarantee that CERs will be sold. Hence, a host country should supplement high quality with aggressive marketing.¹⁵ Altogether, it is obvious that the function of a DNA is complex and varied. Making these skills available in the host countries naturally needs specific and additional capacity development. Therefore, additional investments are required. In the light of the transaction cost theory, the transaction costs linked to the DNA building will be analysed.

4.1.2.6 Reporting

An annual report on the CDM activity in the host country is the last part of the regulatory function of a DNA.

4.1.2.7 Transparency

The evaluation process must be credible and transparent. This implies that rules for screening, evaluation and approval should be made known publicly in advance. Project proponents must have access to the rules and criteria in order to prepare their projects in accordance with the requirements. Moreover, all information used in the evaluation process must be documented and made available for review by projects proponents if required. In case of project rejection, the reason for rejection must be clearly made available so that the project proponents are able to reconsider them in accordance with the requirements. The issue of transparency is so important that in obvious absence of transparency, project proponents may withdraw from participation (Figueres and Olivas, 2002).

4.1.2.8 Staffing

The evaluation of CDM projects requires conventional desired capabilities as well as understanding of the technical requirements of carbon mitigation projects. Since these skills are not always available in the host countries, plus the fact that most of the time required funding for performing the DNA's duty is lacking, staffing a DNA becomes a great challenge. Generally, expertise is needed in the following areas:

14 High quality CDM projects should be characterised by: fostering sustainable development objectives for the host country; additional CERs to the defined baselines; maximisation of the generation and the supply of cost effective CERs; provide reliable information and provide legal resource for both buyers and sellers of CERs (Figueres 2002)

15 For more details see Figueres (2004), pp. 73.

- Understanding of all the criteria for CDM projects as defined in the Bonn and Marrakech Agreements and subsequent guidance from the CDM executive board.
- Knowledge of the crucial national development priorities and the ability to determine whether proposed CDM projects meet or foster these priorities.
- Environmental impact assessment expertise in order to assess the acceptability of proposed CDM projects in addressing national and local environmental problems.
- Legal and regulatory expertise to assess the corresponding aspects of proposed CDM projects and guaranty that the projects are consistent with established national and local laws and regulations (UNEP, 2004).

Obviously, processing the different operations discussed here increases transaction costs that a DNA is expected to bear.

Now, let us consider cost issues linked to this DNA Scenario.

4.2 Costs implications: Empirical Transaction costs

It is difficult to obtain access to information on the costs of the DNAs. Most of the time people consider such information as confidential. In this study, after long discussions with experts involved in DNA building and country representatives, it has been possible to obtain cost information concerning Benin and the WAEMU. Based on the information and a DNA model suggested in Indonesia (Michaelowa, 2004), an adaptation will be done here. The capacity building will involve 12 participants (statements from interviews conducted with DNA members). The number of participants is based on the results of the survey made by the author in the studied countries. In fact the government representatives are willing to have at least five ministries' representatives in the national authority's board and seven other stakeholders. Hence, the national stakeholder composition is shown in table 3 below. One representative of each involved ministry is designated. This leads to five representatives from the government and three representatives from the private sector, as they should be the project proponents or project owners. The academia and the NGOs designed 2 participants each. Obviously the government is better represented as it is responsible for environmental issues facing the international community.

Table 3: National stakeholders

Stakeholders	Number
Ministry of the finances and economic development	1
Ministry of development	1
Ministry of Energy,	1
Ministry of agriculture and rural development and	1
Ministry of the environment	1
Private sector	3
Academia	2
NGOs	2
Total	12

Source: Own table

In addition, a stakeholder forum is organised in order to define and agree on sustainable development criteria. Furthermore, since the economic situation is similar in most of WAEMU countries, the current cost estimates will be the basis for further analysis. The cost estimation is based on cost items such as expenses regarding the operation of a board and a secretariat, running a capacity building program, organising stakeholders' forum and expert consultation and other administrative costs (Michaelowa et al, 2004). Assuming two CDM projects per year, the items are organised in fixed and variable costs according to their nature (see Table 4 below). The items retained in the DNA building are based on the DNA experience available in the literature and the fact that the members of DNAs under consideration supposedly manage capacity building program and stakeholder forums. Moreover, the item capacity building is composed of a local expert's fees and attendance fees for 12 stakeholders during 15 days. Attendance fees are US\$ 35 per participant, wage for staff are US\$ 800 per month for each of the secretary and methodology officers (survey in the studied countries). For more details on cost estimates see Appendix 1.

As presented in table 4, the cost estimation reveals that fixed costs amount to around US\$ 40,000 and variable costs equal around US\$ 27,000. The fixed costs are slightly higher than the variable costs. This is mainly due to wages paid to the staff of the DNA. The variable costs level is explained by the events organised by the DNA. Around US\$ 67,000 is required to conduct the DNA activities per year at country level.

If supposedly the capacity building programme covers three years, these costs will not be incurred thereafter. The problem is that the governments in the case study countries have established their DNA, but no budget is notified and thus there is no signal to show that they can finance them. Presumably, they do not find it necessary to set up a DNA budget. A more radical explanation could be that they are unable to provide funding to

the DNAs. A good justification is that some countries¹⁶ submit a DNA to the CDM Executive Board (UNFCCC, 2006), but no DNA activity or working programme has been made available. This study terms such a DNA as a “façade” DNA.

Of course, no CDM capacity building programme is currently underway. This could mean that these countries have merely satisfied certain project developers’ needs as a precondition to their CDM related activities without properly addressing the capacity building issues. In effect, these countries are in a situation such that they ignore completely how the other countries in the region would react to an offer from investors that require a DNA to start some CDM activities. Hence, each country will accept the requirement to set up a DNA as an administrative formality. One way to address this issue of “facade“ DNAs is to establish a dialogue between the countries concerned in order to reach an accord on a minimum capacity building program, which will be negotiated with investors as a consequence of a DNA set up. In this way, the investors will face the same requirement in all the concerned countries. Therefore, it could be expected that in the end, investors will address the capacity building issue that they do not like to address at the beginning.

Based on the understanding of the author of this study, small countries with low CDM potential who want to participate in the CDM process should opt for a model that provides CDM capacity building to the different stakeholders. In this way, people in developing countries will familiarise themselves with the CO₂ emission reduction activities and probably take these into consideration when they make decisions related to development issues. Another DAN scenario which merely approves CDM projects is possible as discussed in the following section.

16 For example, Benin, Mali, Burkina Faso, Niger, Senegal and Côte d’Ivoire have submitted their DNA to the CDM EB. But the DNAs have no defined programme and are not doing any of the activities the members should conduct (statements from interviews with DNA members).

Table 4: Projected costs for running the national DNA

	Fixed costs	Variable costs	Total costs
	Cost per year	Assuming 2 projects per year	Assuming 2 projects per year
Board	US\$ 700 (4 meetings per year of 5 members - 2 Statutory minimum and 2 Extra meetings if there are projects)	-	US\$ 700
Secretariat	US\$ 37,000 (staff salaries, office rent and equipment,)	US\$ 5,000 (additional outsourced website services)	US\$ 42,000
Capacity building		US\$ 12,300 (expert fee and participants' attendance fees)	US\$ 12,300
Stakeholder forums	-	US\$ 4,800 (unique meeting of 12 persons for agreement on SD criteria and 2 other meetings for 2 projects)	US\$ 4,800
Expert groups	-	US\$ 2,000 (1 report by 2 experts for every project up to 2 per year, and for every 2nd project above 2 projects)	US\$ 2,000
Communication, auditing etc.	US\$ 2,000	US\$ 3,000 (10% of other variable costs)	US\$ 5,000
Total	US\$ 40,000	US\$ 27,000	US\$ 67,000

Source: Adapted from Michaelowa, (2004).

5 SCENARIO 2: MINIMUM SIZE DNA THAT JUST DOES RUBBER-STAMP APPROVAL

5.1 Tasks

5.1.1 Project approval

Let us assume a government of a country has chosen this scenario. A very simplified DNA form such as a ministry could be envisaged to approve CDM projects as part of its current activities. Hence, this case concerns an entity that merely grants approval. In effect the CDM Executive Board is only interested in the notification from a country which confirms that the considered project contributes to the country's sustainable development. Since our focus here is not the TAC linked to CDM project cycle but

rather the DNA costs, it will be possible to argue that in this scenario, the host country will not bear any costs.

5.1.2 Staffing

It could be perceived that a government needs a ministry that grants approval. NGOs or consulting bureau could be entrusted to assess projects and make suggestions to the government. Nonetheless, these basically will create additional cost burden for the government.

Since most experts in the developing countries are not so much familiar with CO₂ emission reduction as discussed in section 4, it will be expected that the skills required will be sourced from the international experts. Subsequently, in this model, the other positive effects of the CDM process such as capacity building to the host country will be reduced. Being aware of these, one could expect that the host country will probably not opt for this DNA scenario. None of the studied countries is considering this option. Nonetheless, let us discuss transaction costs linked to this scenario.

5.2 Transaction costs implications

Here two cases could be distinguished:

If the government makes the assessment by itself, no additional costs will result. Obviously, this option does not accrue any costs to the DNA, but the model does not address the issue of building capacity and consulting stakeholders. Moreover, it is questionable whether the whole CDM approval will be the responsibility of only a single person in a Ministry. The experience from the current DNAs shows that the other Ministries would like to be involved. Hence, one could argue that this option will not be selected by the countries.

The following section analyses a way that the DNAs might be financed at least cost.

6 BUNDLING DNAs - REGIONAL APPROVAL BODY OPTION TO REDUCE TRANSACTION COSTS: UTILISATION OF THE WEST AFRICAN ECONOMIC AND MONETARY UNION

6.1 Bundling DNA and the rationale of a West African Economic and Monetary Union level approval body concept

It is obvious that during ten years, only countries in Latin America¹⁷ (LA), Asia¹⁸, North Africa¹⁹ and South Africa²⁰ have received CDM capacity building programs. Due to their low CDM attractiveness climate discussed in chapter 3, almost none of the countries of the West African Economic and Monetary Union (WAEMU) have received CDM capacity building²¹ programme support. Moreover, in smaller countries such as Benin, Burkina Faso, Niger and Togo, the CDM potential is around 1 million tonne of CO₂ per annum in the energy sector with the best scenarios. Comparing these quantities individually with the other CDM suppliers from the LAC countries and Asia in their energy sectors, these quantities are not significant enough to attract CDM investors who would be willing to bear the CDM institution building costs. In addition, in most of the WAEMU member states there is almost no specific commitment to the CDM issues, to build awareness and to promote the CDM relevant activities. For these reasons, the CDM activity level in the region remains low.

Furthermore, the recent CDM development shows an increasing CDM investor's and CERs buyer's interest for low-cost CERs, projects with large abatement size, relatively easy assessment of baseline and additionality and projects with low lead time (Dang et al., 2006). Hence, countries which are not in line with these requirements will probably not capture the attention of the international investors. Based on that, it is obvious that DNA financing remains a major challenge to host countries, even when they have enough CDM potential. In the light of this lesson, the DNA funding issue should be

17 The countries are: Brazil, Argentina, Bolivia, Chile, Colombia, Costa Rica, Dominican Republic, Ecuador, El Salvador, Guatemala, Honduras, Jamaica, Mexico, Paraguay, Peru, St Lucia, Trinidad & Tobago, Uruguay; sponsored by the World Bank, CAF, UNEP, UNDP, USAID.

18 The countries are: India, Indonesia, China and all Southeast Asia (except Myanmar).

19 The countries are: Morocco, Tunisia, Algeria and Egypt.

20 Republic of South Africa, Zimbabwe and Tanzania.

21 Except Ivory Coast which is participating to Capacity Development for CDM (CD4CDM) of the UNEP. Ivory Coast is currently developing a CDM project pipeline, see: http://cd4cdm.org/countries%20and%20regions/subSaharan%20Africa/Third%20Regional%20Workshop/ProjectPipelineCoteD'Ivoire_Afferi.ppt. In addition, there have been some sporadic events on CDM in Niger and Burkina Faso, organised by UNIDO. See: <http://www.unido.org/doc/42844>.

addressed to some extent in the countries with limited potential by overcoming at least the CO₂ abatement costs, challenging assessment of baseline and additionality and lead time issues. One way to reach this end might be the bundling of CDM authorities. Thereby, several countries with small potential offer together under the same requirements a larger potential to investors.

To sum up, based on the experiences of the Latin America and Caribbean countries, a co-operation between CDM authorities in countries with small potential could be a solution to attract investors. Now let us discuss a theoretical design of the bundled DNA in the case of WAEMU before returning to the co-operation issue.

6.2 The West African Economic and Monetary Union

6.2.1 The main aims of the WAEMU

The WAEMU is a union of eight countries of West Africa²² created in 1994 as shown in photo.

Photo: WAEMU Members countries



Source: <http://www.uemoa.int/Index.htm> .

²² Benin, Burkina Faso, Côte D'Ivoire, Guinea Bissau, Mali, Niger, Senegal, Togo.

Its objectives are:

- Creation and reinforcement of the competitiveness of economical and financial activities of the members in the framework of a common and open market, based on a rationalised and harmonised judicial environment,
- Securing of the convergence of economic policies of members,
- Creation of a common market of free circulation of people, goods, services and capital,
- Co-ordination of common policies in human resources, natural resources, agriculture, energy, mines, transport and telecommunication sectors,
- Creation of necessary conditions for better functioning of the common market.²³

The union has more than ten years of experience and making steady institutional and organisational improvements. It is reliable and has a high reputation amongst member states.

6.2.2 Organisational structure

The union consists of: a Managing organ, composed of the Conference of the Heads of States (CHS) and the Council of the Ministries (CM)²⁴, and a Control organ composed of a Court of Auditors, a justice court, an inter-parliamentary committee. Moreover, an Advisory organ is composed of regional consular chambers. Autonomous specialised institutions are the West African Central Bank (BCEAO), and the West African Development Bank (BOAD).

The union has a permanent commission composed of eight members, with one representative from each country. Its headquarters is located in Ouagadougou in Burkina Faso. The eight members meet to vote on the president and vice president. It executes the policy measures from the Council of the Ministries (CM) and suggests to the Conference of the Heads of State (CHS) and the CM policy measures that help achieve the goals of the Union. It also executes the budget of the union. It can seek the help of the justice courts when countries do not keep to their obligations.

²³ For more information, see: <http://www.uemoa.int> .

²⁴ 16 ministries are represented, two from each country. The finance minister of each country is one of the two candidates. The central Bank organises the meetings of the ministers and operates the secretariat.

Additionally the Union has an expert committee of 16 members, with 2 from each country. They are called upon on the demand of the Council of Ministers (CM) through the commission. It is also possible that sector-based experts are used for specific tasks.²⁵

Following the above short presentation of the union's structure, the subsequent section will analyse the institutions that will probably be involved in the regional DNA such as the commission of the WAEMU, and also propose a possible way to link a DNA to the existing structure of the union.

6.2.3 Analysis of working structure of the Commission of the WAEMU

The commission exerts, for the correct operation and general interest of the union, authority delegated by the CM. It transmits to the conference and the council the recommendations and opinions that it judges useful for the preservation and the development of the union. Moreover, it executes the budget of the union and can convene the Court of Justice in the event of failure of a Member State to the obligations which fall to them under the terms of the Community legislation. In addition, it is the permanent organ of the Union, composed of eight departments²⁶.

Since CDM activities are related to investment, energy generation and Land Use Land Use Change and Forestry (LULUCF) and development, the departments whose attributions cover the issues of the CDM should be taken into consideration, such as the department of Investment and International Co-operation (IIC), the department of Rural Development and Environment (RDE) and the department of Social Development, Energy, Mine, Industry and Tourism (SDEMIT). Each department is composed of a cabinet and three directions. Within the RDE department, there is a direction of agriculture, a direction of Environment and a direction of animal resources. As for the SDEMIT department, there is a direction of energies and mines, a direction of industry, arts and tourism, and a direction of private sector promotion and competition. About three permanent personnel work in each direction. For further analysis, the direction of investment and private sector promotion, environment, development, agriculture and energies will be taken into consideration as their attributions are in line with skills needed at the DNA.

²⁵ For more information, see: <http://www.uemoa.int>

²⁶ Presidency of the commission; economic policies; tax, customs and trade policies; regional community planning, infrastructures transport and telecommunications; rural development and environment; social development; energy, mine, industry and tourism; structural funds and international co-operation. For more information, see: <http://www.uemoa.int> .

After this short analysis of the working structure of the commission of the WAEMU, we will now discuss the issue of a regional approval body.

7 REGIONAL APPROVAL BODY BASED ON THE WAEMU STRUCTURES: THE CONCEPT

From the analysis of the structures of the WAEMU, the commission has a suitable structure that can be used to set up a RAB. Since CDM is linked to energy and LULUCF and is a market mechanism that involves the private sector and international investors, the direction of investment, environment, development, agriculture, energies and private sector promotion are suitable and should share the role of the DNA (see figure 1). In effect, the conference of heads of states is the highest organ of the union that gives order to the directions through the commission. Hence, the heads of states sends their decisions to the council of ministers for adoption. The council of minister forwards the adopted decisions to the commission for execution. The commission dispatches the decisions to the different departments according to their specific skills. The departments attribute the tasks to their respective directions. which have permanent work stations. Since a DNA requires a permanent organ, it is conceivable that the regional DNA would be composed of representatives from the five directions such as the direction of environment, development, agriculture, energies, investment and private sector promotion. In fact, each direction will send one personnel that deals with aspects related to the CDM to build up the RAB (see figure 1). Hence we will have a permanent board of five members as RAB. These five personnel will be specialised in CDM issues:

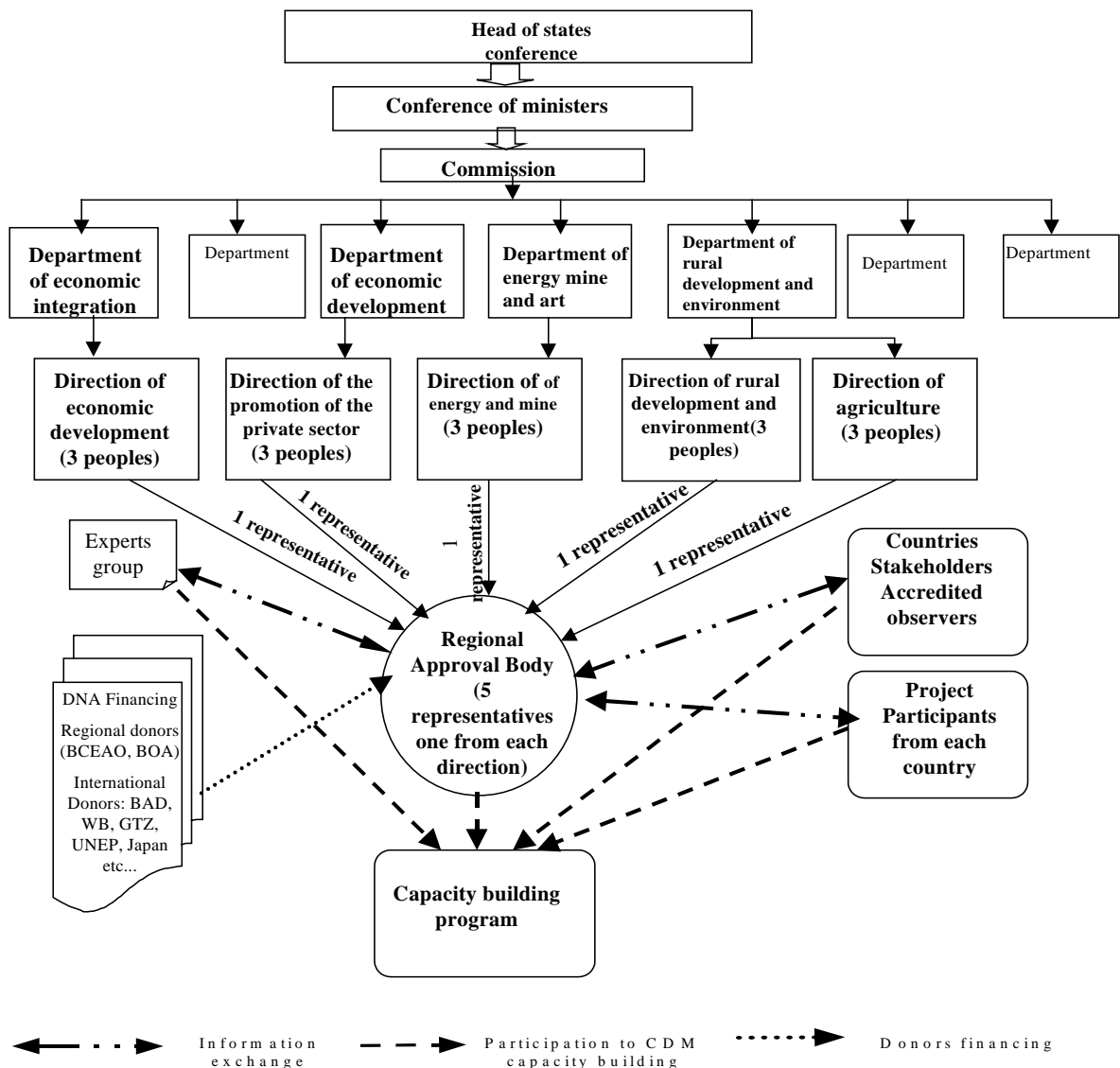
- one executive secretary, who processes administrative work and provides organisational support to meetings of the stakeholders, approval of CDM projects.
- One communication and logistic manager who deals with information technologies, information gathering and dissemination,
- One book keeper, dealing with fund raising from local and international donors or CDM investors and,
- Two personnel specialised in the CDM methodologies. They provide valuable information on the understanding of the Kyoto Protocol, the project-based mechanism and methodologies for CDM project development.

The RAB will approve CDM projects for each country and should inter alia administer the CDM capacity building program and the stakeholders' forums in the WAEMU countries. It is foreseeable that such a DNA, as an innovative costs reduction option,

receives funding support from the financing organs of the WAEMU as well as the international funding institutions such as the World Bank, the African Development Bank (AfBD), UNEP, GTZ and AFD.

Assuming that each member state has given its agreement to entrust the WAEMU with the tasks of the RAB, it becomes important to define the working structure of this regional DNA and its relationship with the stakeholders and other international institutions. Before that, we will analyse the rationale of the RAB.

Figure 1: Regional DNA structure



Source: own figure.

7.1 Rationale of the regional approval body concept

In this section, costs to national and regional DNAs are analysed and the rationale for the regional option is shown. To this end, it is worth noting the main assumptions that support the regional option:

- A DNA that just delivers rubber stamp approval is excluded²⁷,
- Well-designed and well-organised DNA which professionally processes tasks beyond mandatory tasks is retained.²⁸
- Most of the DNAs functioning currently are financed by international donors or CDM investors.

The analysis builds on three pillars:

- First, a DNA set up is a pre-requisite to activities in all countries. Therefore, if the purchaser should bear the set-up costs, running costs and capacity building costs, he will finance eight times national DNA costs.
- Second, by establishing one unique DNA for the union, the countries can be considered as a unique supplier of CERs. From this point of view, the CERs might be cheaper compared to the country level DNA option. This discussion is summarised in Figure 2 below.

In the figure, the Y axis indicates total average costs and the X axis represents CERs quantities. It is assumed that transaction costs vary from country to country. Hence, let C1, C2, C3, C4 be the respective theoretical total average costs of earning CERs in each of the four countries of the study and C be the total average costs of the regional DNA for the four countries.

A represents economies of scale to the investor: as quantity increases, the cost of each unit decreases. B corresponds to a constant return on scale: costs remain constant when quantity increases. D stands for diseconomies of scale: increasing costs with increasing quantity generated. Due to the bundling of the DNA, in segment A, an investor earns increasing units of CERs (such that $Q2 > Q1$) at decreasing total average costs

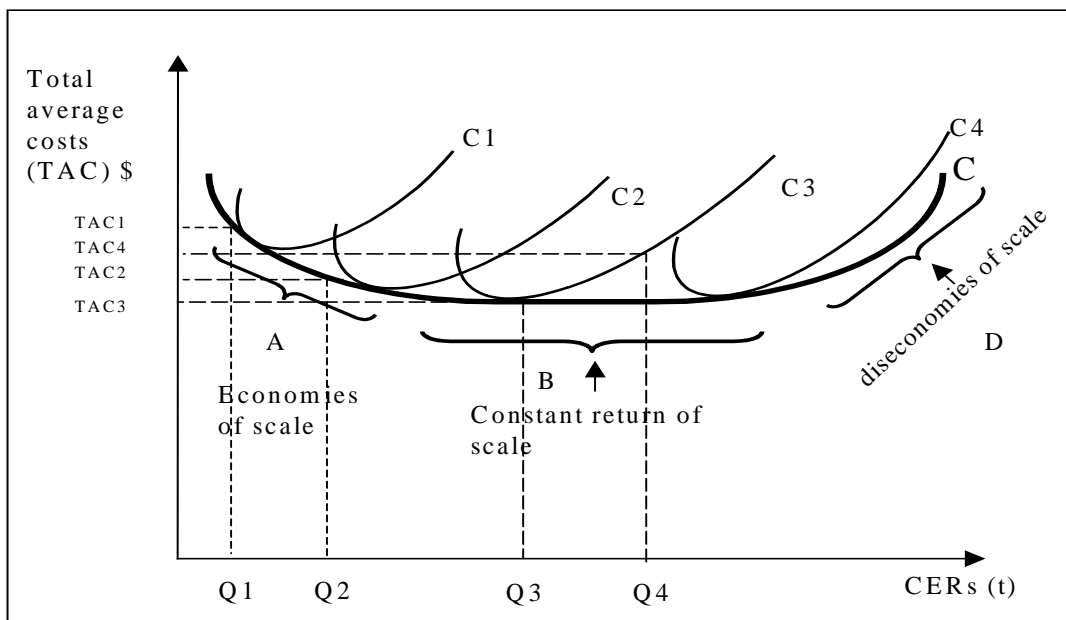
27 As this model neglects capacity building which is crucial to the countries' active participation in the CDM process, there will be no need to discuss this option further.

28 This model guarantee capacity building.

($TAC1 > TAC2$), while in segment B, he earns additional CERs at constant total average costs. Due to the slow development of economic activities and subsequently low CDM potential in the countries, the situation in C with increasing total average costs per additional CERs is unlikely to be reached.

Hence, an investor will earn CERs in the segments A and B. These might prove attractive to investors. Therefore, a bundling or a regional approval body offers a least-cost option to finance CDM institutions with cheaper CERs in a region provided with small countries and lower CDM potential.

Figure 2: Economies of scale with regional CDM institutions



Source: Own figure.

Third the UEMOA personnel are mostly permanent and not directly influenced by their respective governments. Thus, they could perform their work freely, objectively and guarantee at the same time continuity in the follow-up and development of the CDM activities. Thus, for this reason, it makes sense from the society's point of view to have a centralised approval body.

7.2 Desired features of the regional approval body for WAEMU membership

In order to attract WAEMU membership, the DNA should have a simple and transparent decision making structure, as well as a simple and clear procedure to give regional approval to projects in the fastest way possible. Moreover, the approval should be delivered efficiently, with high quality work and low cost administration that deals with GHG emissions projects with sustainable development requirements. Furthermore, it should identify risks and make suggestions to overcome them. It should be able to propose a list of regional criteria that safeguards regional integrity but which is not prohibitive for project developers. The focus should be to position the region as a source of good projects with an effective institutional arrangement for approval (UNEP 2004). In addition, the DNA should identify in advance the experts with specific skills to deal with specific requirements of CDM projects, such as GHG mitigation and carbon revenue. It will establish a simple and clear regional project cycle for approving CDM projects. Such a DNA could be labelled “*optimal DNA*”.

In the future, with project development, an option should be to raise a percentage of the CER revenue to finance the DNA. However, such an option will weaken the countries’ competitiveness in the international CDM market.

After discussing the general features of the regional approval body, let us analyse its structure based on the experiences gained in the LAC DNA cases. The first structure is called *ideal structure* and the second is called *second best*.

7.2.1 Structure of regional approval body: all competence at WAEMU

The RAB is composed of a permanent secretariat of five people specialised in CDM issues, as discussed in section 6.2.3 and 7. The so composed RAB will proceed with all the approval tasks and send the approval letters to the CDM Executive Board. Of course, the host countries are also informed on the projects that have been approved. Obviously, this structure is easy to manage, as the whole approval process is entrusted to one organ or structure. However, opposition to this RAB option may appear as government representatives are eager to participate in the CDM process, for different reasons such as a country’s sovereignty and own interests, which will be analysed in section 8.

7.2.2 Cost implications

The cost assessment of the regional DNA is based on cost items as shown in table 5 below. The board is composed of 5 members, from which a permanent secretariat of 3 personnel is derived. They meet statutorily twice a year. Additional meetings are conducted for project assessment. For the purpose of the calculations we assume that two projects are submitted per year. The capacity building involved 96 participants, 12 from each country. The number of participants involved is based on the discussion made in section 4.2. In addition, a stakeholder forum is organised to define and agree on sustainable development in each country. The item travel costs accrues here as it has been assumed that it will not be efficient to organise capacity building with 96 participants in one room. Hence, the research suggests that the participants be split up into two groups of 48 participants each. The capacity building will be organised in two different countries. Hence, 74 participants plus the 5 regional DNA members will travel to the two capacity building venues. Furthermore, the expert group will be invited by the regional DNA when specific tasks are requested. Their role will be to assess specific aspects of a project. They should be paid at the outset of DNA budget. The remuneration and the travel costs used for the calculation are based on information from the WAEMU commission (result of interview). The result of the assessment is shown in table 5.

Overall costs to the DNA are around US\$ 154,000. An analysis of the costs reveals that travel costs charged to the DNA are costs for capacity building and stakeholder forums. Due to the higher number of participant at the meetings, a large share of the costs of running the DNA is variable. These variable costs will be incurred for meetings, when experts advice is needed, and when stakeholder forums are organised. Total variable costs are estimated at about US\$ 98.000 per year, while the fixed costs are around US\$ 59,000. For more details on cost estimates see Appendix 2

Table 5: Projected costs for running the regional approval body based on 8 countries and 8 projects per year

	Fixed costs	Variable costs	Total costs
	Cost per year	Assuming 2 projects per year	Assuming 8 projects per year
Board	US\$ 3,250 (10 meetings per year of 5 members)*	-	US\$ 3,250
Secretariat	US\$ 53,000 (staff salaries, office rent and equipment)	US\$ 5,000 (additional outsourced website services)	US\$ 34,000
Capacity building		US\$ 46,500 (expert fee and participants' attendance fees)	US\$ 46,500
Stakeholder forums	-	US\$ 18,410 (unique meeting of 96 persons for agreement on SD criteria and 2 other meetings for 2 projects)	US\$ 18,410
Travel costs		US\$ 10,900 (1 regional expert travel 74 participants travel 5 DNA members travel)	US\$ 10,900
Expert groups	-	US\$ 8,000 (1 report by 2 experts for every project up to 8 per year, and for every 2nd project above 8 projects, US\$ 500/assignment)	US\$ 8,000
Communication, auditing etc.	US\$ 2,000	US\$ 9,000 (10% of other variable costs)	US\$ 11,000
Total	US\$ 59,000	US\$ 98,000	US\$ 157,000

Source: Adapted from Michaelowa 2004 Information guided from expert works telephone conference and survey in the studied countries. Note: See detailed cost estimates in Appendix 2.

Obviously, the option presented here does not involve host countries in the approval procedure.

7.3 Cost saving of the regional DNA

In this section, the saving made based on the RAB option as well as the implication to the generated CERs in the region will be analysed. The total annual costs of running the retained RAB is about US\$ 157,000. But taking into consideration the fact that this concerns eight countries, it becomes interesting to make a short analysis. Practically, it can be shown in table 6 below that a regional CDM institution really offers cheaper CERs. In the table, option I represents a country level of the DNA scenario, option II indicates a RAB scenario and option III represents the scenario in which at the end,

eight times support is provided to the CDM institutions' building and operation. The total costs under option II is lower than that under option III (157,000 < 536,000). Moreover, options II and III have the same CER revenues (US\$ 80 million), but option II offers lower-cost CERs (\$c 2/t) than option III (\$c 7/t), which is around 70% cheaper.

Table 6: CER costs comparison between national and regional options

	CDM potential (Million Ton CO ₂ -eq)*	Fixed costs (US\$)	Variable costs (US\$)	Total costs (US\$)	Cost/t CO ₂ (US\$-cent)	CER revenue (M US\$)
Option I	1	40,000	27,000	67,000	7	10
Option II	8	59,000	98,000	157,000	2	80
Option III = 8X option I	8	320,000	216,000	536,000	7	80

based on the two costs scenarios on table 4 and 5. It is assumed that each country has a potential of 1 million tonnes of CO₂-eq; 1 CER = 1 tonne CO₂-eq.; CERs price: US\$ 9; CER are 70% cheaper in option II compared with option III.

Source: own table.

In order to analyse the DNA stakeholdre' behaviour and suggest suitable recommendations to forsee a better co-operation between stakeholders, the following section anylyses the stakeholders' utility maximisation stragegy based on the public choice theory.

8 STAKEHOLDERS' BEHAVIOUR: PUBLIC CHOICE EXPLANATION OF POSSIBLE DNA MEMBERS' BEHAVIOUR

In this section, the stakeholders' behaviour will be analysed, based on the assumption that they reject the economically efficient regional DNA and rather opt for national DNA that we term politically efficient DNA.²⁹

8.1 Methodology

The Public Choice or New Political Economy (NPE) is an attempt to economically explain the stakeholders' behaviour in each aspect of the society.

²⁹ The Public Choice literature shows that individual utility maximization of politicians and interest groups will lead to politically efficient equilibriums, but that these equilibriums are not economically (or socially) efficient (Frey, 1990; Vaubel, 1991).

While similar in many respects to the neo-classical economics analysis, the NPE tools differ significantly from the neo-classical approach, in analysing the political process and the interaction between the economy and polity. Thus, the NPE provides on one hand a clear understanding of the functioning of political institutions and the behaviour of a specific government, parties, voters, interest groups, and (public) bureaucracies - (*stakeholders*). On the other hand, it seeks to establish normatively the most desirable and effective political institutions (Frey, 1990).

Basically in each sector, the actors at individual levels are the main focus. It is assumed that each individual pursues his or her perceived interests. Thus, the NPE adopts the fundamental principles of liberal economics. It assumes that the mankind is an “egoistic, rational, utility maximiser”³⁰ who endeavours to relate means to ends as efficiently as possible. Hence, based on the “homo-economicus”³¹ rational behaviour, each actor will choose between alternatives that bring her or him the maximum utility.

As far as optimisation calculations are concerned, the actors with similar behaviour preferences should be grouped together and treated as an actor or individual. This simplification is necessary to ease the analysis in the present framework (Frey, 1985, p. 159). Thus different actors can be summarised as follows: Voters, politicians, bureaucracies and interest groups. The voters’ behaviour is not analysed in the present research, as they do not form any specific interest group with respect to climate change issues. Of course, the other stakeholders could also be considered as voter, but in this study, election is not at stake.

As for politicians, for the purpose of this research only ministers that are directly involved in the climate change-related activities and their representatives are of concern. Parliaments are not directly involved in the process and therefore will not be discussed here.

As for interest groups, only NGOs that are dealing with climate change and / or development are of interest. Journalists, for example, will not be considered in the current research as they do not form any specific interest group with respect to climate change issues.

30 Each actor maximises its utility function composed of physical and non-physical goods. The utility function may well include the well-being of others. However, the well-being of others is not the focus of the NPE. Hence, the individual actors’ utility function is the focus.

31 Homo economicus bases his choices only on the consideration of his own personal “utility function”.

The selected stakeholder's behaviour will be analysed in the process of setting up an operational DNA. In fact the objective is to set up a DNA as discussed in section 7.2 which maximises social welfare.³² As stakeholders from government are involved, due to the rationality issue, it is likely that they do not opt for the economically efficient option.

In the light of what has been said, a proposal of the best institution building that favours the functioning of bureaucracies and organisations should be made. Here, from the society's point of view, it is important how the policy measures should look like in order to be easily enforceable. Indeed, the cost-benefit analysis again plays an important role here by comparing the results of different stakeholders in terms of utility³³ gained or lost. It therefore follows that the NPE approach has both positive and normative applications. It can be used to illuminate the conditions for successful collective action and to show why some interests may be more successfully "aggregated" than others. Additionally, it can help clarify the choices facing a decision-maker (individual or institutional) and help in deciding how best to achieve specific goals as economically efficient as possible. In fact, the NPE has been used for environment policy analysis (Holzinger, 1994; Teuscher, 1995) and the stakeholders' behaviour analysis in the international climate change convention negotiation (Michaelowa, 1998). In the CDM institutions building discussion, the NPE has until now not yet been applied.

Now let us analyse the different actors' behaviour and their utility maximisation strategy in the context of the regional DNA compared to national DNA.

32 Social welfare is defined as the summation of the welfare of all the individuals in the society (Arrow, 1963; Little, 1956). In the current research, for the purposes of the analysis, the society is restricted to the stakeholders directly involved in the CDM and the DNA building process, as the indirect effects on other members of the society is conceivable but not discussed here. In addition, we are aware of problems occurring with welfare measurements such as strong underlying assumptions (utility is cardinal, all individuals have interpersonally comparable utility function, etc.) and utility aggregation problems (Guerrien, 2002). However, the research is not addressing these issues, but uses the notion to analyse the benefit of the sub-regional CDM community when they decide in favour or not of the regional DNA.

33 Utility as a measure of the happiness or satisfaction gained from a good or service (Perman 1999). Utility theory assumes that humankind is rational. That is, people maximise their utility wherever possible.

8.2 DNA members and their utility function

8.2.1 Regional approval body's members

The regional approval body is composed of two organs: a small permanent secretariat of five personnel and a larger committee composed of stakeholders at country level.

- **Permanent secretariat**

The secretariat actors here are personnel of the WAEMU and will deal with CDM specific issues relevant to the WAEMU. They can be assimilated to bureaucrats in the NPE terminology (Michaelowa, K., 2003, p. 192). Based on the discussion made in chapter 8, it has been assumed that the regional DNA executive board will administer the DNA budget, perform the current secretariat duties, organise capacity building for stakeholders and stakeholders' forums at national level and approves CDM projects. The secretariat's members will be specialised in CDM issues and have no other duties. The secretariat will be managing directly the RAB's budget. The total budget is spent to arrange the DNA office, organise meetings, distribute per diem to meeting participants and wages to the staff.

The utility function of the bureaucrats comprises budget, prestige, pleasant working conditions and flexibility in discretionary decision making, as discussed in international bureaucracies' utility function (Vaubel, 1991). In fact, the RAB workers will like to enjoy better working conditions, such as refurbishment of existing buildings, refurbished offices with new equipment, etc. As far as higher freedom in decision making is concerned, the DNA executive board will not like to inform the committees on issues which will be discussed with donors. In addition, one could imagine that the DNA executive board, in order to spend the budget in the way they want, will likely hide information on budget administration. Hence, the committee is not really informed on the way the DNA budget is spent. The DNA board will likely use this opportunity in the budget administration to spend part of the budget for their own purposes. As for a moral satisfaction, the participants will be proud of being members of the RAB which is a novel concept.

As utility gained from better working conditions, freedom in decision making and morale satisfaction can not be assessed quantitatively, the current research assumes that the utility function is restricted to per diem distribution and number of meetings. Wages

are most of the time fixed by laws. Their increase depends on other processes at institutional level and is beyond the scope of the current research.

Under these simplifications and an adaptation from Vaubel (1991) the utility function of the bureaucrats could be considered *ceteris paribus*, as a positive function of per diem and meeting. Hence, $U^b = f(P, M)$ to be maximised under B, where P and M stand for per diem and meetings respectively, with U^b the bureaucracies utility function and B the budget.

According to its functions, the secretariat will first of all be interested in maximising its utility, namely, income from operation on different CDM procedures and per diem from different meetings. Naturally, it is in their own interest that the DNA is set up and sustained. Furthermore, meetings of the secretariat are composed of capacity building programmes, CDM project approvals. In contrast, the secretariat will not participate in the stakeholders' forums which normally concern stakeholders at national level. For this event the regional secretariat members will not be paid any per diem. In this condition, the secretariat will favour more capacity building and CDM project approval, while stakeholders' forums will be less preferred or supported. Hence, the more meetings, the more the DNA members are better off. The more stakeholders' forums the less savings will be made on the DNA budget.

To maximise its utility, the secretariat will try to limit the budget expense through the limitation of participants to the events and the number of stakeholders' forums. By so doing, the savings realised on the DNA budget could be spent to improve working conditions³⁴, distribute wages to the staff and organise more meetings. Hence, the secretariat derives utility from organising more capacity building events as well as persuading through incentives the country representatives to limit participants from their countries to the events. The secretariat is constrained in the event supply by the budget B made available by the donors.

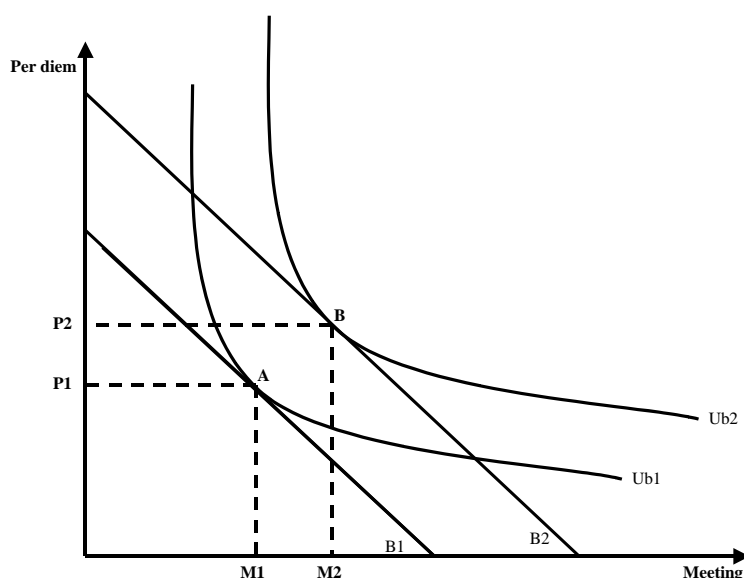
If capacity building events demand increases, the secretariat will spend savings to supply more events and increases its utility. Adapted from Vaubel (1991), the discussion can be graphically illustrated as shown in figure 3. B1 and B2 represent the budget lines. U_{b1} is the indifference curve (utility function) of the bureaucrats linked to B1, U_{b2} the one linked to B2. X axis stands for number of meetings, Y axis for number of per diems. Furthermore, for simplification and for the purpose of the analysis, we

34 Refurbishment of existing building, new equipment, multiplication of ad hoc meetings, etc.

assume that meeting represents meetings and number of participants at the meeting. In addition, as the RAB is a new concept, one assumes that DNA staff has little experience with the budget composition and will be willing to increase budget items when needs are expressed from the committees.

Additional funds are supposed to be raised from donors. Therefore, the research assumes that the RAB's budget is at the beginning not fixed. The DNA board can use this opportunity to organise more meetings. By organising more meetings, B1 shifts outward to B2 and reaches a point of tangency with a higher indifference curve Ub2 at a higher level of meeting and per diem. Therefore, a higher utility is achieved. One could imagine that donors impose the numbers of participants to the events and at stakeholders' forums, for different reasons such as, inter alia, the donors decide to disseminate CDM information to a given number of participants in a given period of time.

Figure 3: Utility maximisation by the regional secretariat



Source: Own figure, adapted from Vaubel (1991)

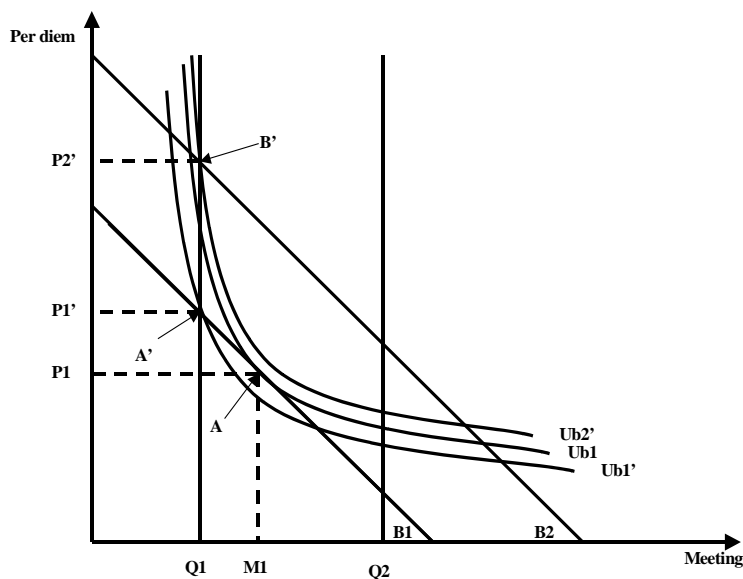
Let Q1 be the number imposed on the secretariat. If the constraint limits the secretariat's event organisations, the secretariat does not manoeuvre at the point of tangency of the budget curve and its highest indifference curve (point A) but at the intersection of the budget curve and the imposed number (point A' in figure 4). In this case, an increase of demand for stakeholders' events induces an offer of a higher per diem to countries'

decision makers in order to bargain on a lower number of meetings. In fact, the higher per diem in turn benefits the secretariat which also earns a higher per diem at point B' intersection of the budget line B2 with the imposed number Q1. This analysis is illustrated in figure 4. An increase in the imposed number Q2 leads to more events or meetings organised by the secretariat but not beyond the point of tangency A, as the number of meetings above M1 leads to declining per diem and is not in the secretariat's interest.

- **Committee**

The committee is composed of countries' stakeholders. They do not form a permanent organ of the RAB. They are paid per diem during meetings and when sustainability criteria for CDM projects are selected. At national level, they are responsible for national sustainability criteria definition. Based on the discussion made in section 4.2, they are composed of representatives from ministries, private sector, academia and NGOs. In this case, the committees will be analysed as single actors. What unites the committees' members are per diem, and moral satisfaction from being members of the RAB. They will not administer a DNA budget as this budget is at the regional secretariat. Hence, based on the same assumptions as in the regional case, the utility function of the members of committees can be described as a function of per diem and moral satisfaction.

Figure 4: Utility maximisation by the regional secretariat under imposed number of participants



Source: Own figure, adapted from Vaubel (1991).

As the committee's memberships are non-permanent it is conceivable that they have an alternative job and thus they will incur some opportunity costs in coming to the meetings. Hence, there is a trade-off between participating in the committee's events and their daily jobs. It is conceivable that they opt for participating in the meetings of the committee when expected utility is higher than not participating. As detailed information on the daily occupation of the committees' members is not available, the current research will not analyse this particular aspect further. Furthermore, the committees would like all their members to participate in the different events organised by the regional secretariat. Here the ministries' representatives will decide on the composition number of committees, as at national level, they currently have more power compared to the other stakeholders. In addition, the committee would like to have as many meetings as possible. Hence, the utility maximisation strategy of the committees is to maximise the number of committee meetings, the number of capacity building events and the number of participants. Of course, with a given budget, a high number of participants leads to decreasing per diem. For this reason, ministries' representatives will try to keep the number of participants low so that their utility is maximised. Hence, there is a potential conflict between ministries' representatives and the other stakeholders. When the number of the committee members is selected, the committee will behave as a single actor. In that case, they will try to maximise the event numbers, as they could design incomplete sustainable development criteria and request additional meetings to complete and update them.

8.2.2 National DNA members

The country level DNA is the non-permanent committee in the case of the RAB. In case the countries oppose the regional option, it is assumed that the national DNAs have a budget. But based on the analysis made in section 7, this budget will not be made available.

Based on the surveys made in the studied countries, the countries' representative are willing to have a two-tiered DNA (result of the survey in the studied countries): one permanent organ composed of ministries representatives and a committee composed of private sector, academia and NGOs representatives. At country level, stakeholders do not have the same interests anymore and ministries' representatives possess more power than the other stakeholders. The utility maximisation strategy of the stakeholders is analysed as follows.

8.2.2.1 Ministry representatives and their utility function

These are national civil servants and should be involved as they are the ministries' representatives and are councillors of the ministries. As the Kyoto Protocol requires countries' commitment, ministries' representatives meet and decide on behalf of their ministries and in the end for their country which is directly responsible in the face of the international climate change community. However, the ministries' representatives are not necessarily politicians. Most of the time they build up the country level DNA together with other stakeholders. Ministry's representatives here can be assimilated to bureaucrats in the NPE jargon as they are supposed to perform specific tasks relevant to their ministries (Michaelowa, K., 2003). At national level, they have more power compared to the other stakeholders.

For the analysis here, we assume that the national DNA will organise the events as discussed in the regional DNA case for the country participants. In that case, their utility function *encompasses budget, prestige, pleasant working conditions and flexibility in decision making* (Vaubel, 1991). The stakeholders here have the same utility function as the bureaucrats in the regional case. Based on the same assumptions like in the regional case, the bureaucrats here and those at regional DNA level have the same utility maximisation strategy (see bureaucrats in the regional case in previous section).

8.2.2.2 Private sector representatives and their utility function

Since climate change is receiving increasingly more attention, most investors in favour of the climate change mitigation activities would like to show in the international arena that they are environment friendly. In addition, CERs revenues are of high importance for the private investors. Hence, their utility function is a function of prestige and CERs revenues.

As they will be members of the committee, they could influence policy making by voting against complicated procedures or sustainable development (SD) criteria that will not be in favour of CDM project development. They will prefer the SD criteria to be as low as possible and the procedure with the lowest transaction costs (Sutter and Parreno, 2005).

8.2.2.3 Non Governmental Organisations (NGOs) and their utility function

Due to democratisation in the last ten years, NGOs are in steady development in the developing countries involved in this research. Most of the time, they are linked to a

region or a specific community (Michaelowa 1998). They advocate raising the standard of the population's living conditions by providing jobs or playing an intermediary's role to source for greater financing. Since climate change activities receive world wide financial support, many NGOs in developing countries pretend to be climate change NGOs. In reality, one can distinguish between NGOs which just claim they are environmental NGOs without any climate related activities from those with climate change related activities as their main objective, quite well trained and organised. Most of the time the well trained and well- organised ones are local branches of international NGOs. The former category of NGOs will lack all necessary information and have no research programme and no proper expertise.³⁵ The current research is interested in the well trained and organised NGOs as they can better deal with the climate change issues and make valuable contributions.

As climate change and greenhouse gas mitigation are not the priority in the developing countries, their NGOs cannot be expected to advocate global mitigation effects. In contrast to the private sector representatives, they will advocate as much as they can for local climate change mitigation activities and the support of clean development mechanism activities. Thus in the DNA committee, they will behave in a way that would keep sustainable development criteria as high a priority as possible. Nevertheless, the SD criteria should be cautiously designed so that they are not prohibitive to CDM activities.

The NGOs' participation in the committees' activities does not necessarily lead to high financial revenues; they could nevertheless seek reputation by being a member of the committee, and thereafter use this position to claim more financial means from donors. The NGOs will try to obtain the largest budget from different donors for their activities. Hence *their utility function is a function of prestige per diem and budget*.

8.2.2.4 Academia

Under academia, one considers the research institutes affiliated to universities. As there are many research institutes in the universities, we are not interested in all of them. Only research institutes dealing with climate change and development issues are selected. In fact the academics will give their consultancy on issues related to the CDM. Their

³⁵ This explains why they are unable to participate in discussions like the environmental NGOs in industrialised countries. In contrast, they try to raise the living standards of their managing committees (interview with environment protection and development NGOs in WAEMU countries)

opinion should be the result of their scientific researches. They are supposed to give valuable consultancy. The academia will try to show the other stakeholders that their works are of high relevance as scientific works. They will then try to direct the consultancy works towards their research institutes. This will of course bring to them consultancy revenues. In addition, they will be paid per diem for attendance to events of the DNA and will be proud of being members of the DNA. Hence, their utility function is composed of per diem and consultancy revenue and moral satisfaction. Though they will try to have as much consultancy as possible and enjoy more meetings.

After what has been discussed so far, there are potential conflicts of interest between some stakeholders. This is analysed in the next section.

8.3 Analysis of stakeholders' interest in the regional and national NDA options

This section compares stakeholders' interests and analyses a way to reconcile potential conflict in order to reach the social optimum, which is a set up of a *operational DNA at least-cost*, discussed in section 7.2.

The stakeholders' interest discussed so far is summarised in table 7 below. In the RAB option, the permanent secretariat will be composed of only personnel from the WAEMU, while the committee is composed of both ministries' representatives and the other stakeholders. In addition, the committee here behaves as an actor and will try to maximise per diem, while the permanent secretariat, in addition to the per diem, will administer the DNA budget and be paid wages.

In the national DNA case in contrast, ministries' representatives play the role of the permanent secretariat and will administer the national DNA budget, earn wages, per diem and capacity building. They do not have the same interest with the stakeholders which will earn only per diem. In both options, apart from ministries' representatives and regional personnel which roles change according to the option considered, the other stakeholders have the same role and the same interest.

An analysis of interests of ministries' representatives and the RAB's personnel shows that at national level the utility function of the ministries' representatives is the same with that of the RAB's personnel at regional level. In fact, when the ministries' representatives opt for the regional option, they give up the opportunity to enjoy the utility of administering the DNA budget, earning wages and capacity building; while when they opt for country level DNA, they prevent RAB personnel involved in the

process from enjoying the same utility. Hence, the utilities of the RAB personnel and ministries' representatives are conflicting. Moreover, ministries representatives as discussed earlier have higher power in countries' decision to opt or not for the regional DNA concept. When the ministries' representatives reject the regional option, their objective diverges from the social optimum. This is reflected by the negative sign in table 7. The objectives of the other stakeholders do not diverge from the social optimum. Hence, it is important to discuss how incentives should be provided in order to make ministries' representatives act in favour of the social optimum.

Table 7: Stakeholders interest comparison and impact on social optimum

DNA options	Stakeholders	Utility function variables	Impact on social optimum
Regional DNA or RAB	Permanent secretariat (WAEMU personnel)	Budget, wages, per diem, capacity building	+
	Committee (Ministries' representatives, private sector, academia, NGOs representatives)	Per diem, capacity building	+
National DNA	Permanent secretariat (Ministries' representatives)	Budget, per diem, capacity building	-
	Committee (private sector, academia, NGOs representatives)	Per diem, capacity building	+

Source: Own table.

8.4 Incentive for ministries representatives

The above discussion has shown that the interests of ministries' representatives are in conflict with the WAEMU personnel's. Hence, one could imagine that ministries' representatives will reject the regional option. Once again, it is assumed that countries will not make the national DNA budget available. Based on the discussion made in section 7.1, there are opportunity costs linked to the regional and national DNA options. An analysis of the opportunity costs reveals that in the regional option, ministries' representatives give up wages per diem and capacity building that they would get in the national DNA option, while in the national DNA option they give up per diem and capacity building.

As we assumed that in the national DNA option, investors are not going to provide the required funds, the opportunity cost to ministries' representatives in the regional option is zero. Since per diem and capacity building's values are greater than zero, one could deduce that from the economist's point of view, ministries' representatives will reject the national DNA option. However, it is conceivable that countries claim their sovereignty on DNAs by rejecting the regional option. For this reason, two options will be discussed below to help host countries' decision makers to arrive at an appropriate decision.

Let us call the option of national DNA, option 1 (opt 1). In this case, due to the fact that the countries do not have the means to set up a DNA, it will not be established. Therefore no CDM project will take place. Hence, countries will not earn any carbon revenue.

In the second case, a country decides for a regional DNA option, Let us call it option 2 (opt 2). In this case, donors might finance a DNA program, so that CDM projects would take place.

As earlier presented in the four studied countries, the CDM potential is about 1 million tonne of CO₂ in the energy sector (National communications). For the analysis, let us assume that the potential in the energy sector is the same (1 million tonne CO₂) in each of the WEAMU countries. With a carbon price of US\$10³⁶, a country would expect carbon revenues about US\$ 10 million. In addition, it will profit from capacity building which provides skills to its stakeholders.

The opportunity costs linked to opt1 are negative (US\$ 10 millions + the value of skills people would have earned - TAC). On the contrary, the opportunity costs of opt 2 are positive (US\$ 10 millions + the value of skills people acquired - TAC). So a rational country should choose the option associated with lower opportunity costs, i.e. opt 2, a RAB. Besides, countries have an added motivation to select opt 2, since they will not bear the costs of the capacity building program. In reality, decision making at a country level is not always based on economic rationality. Nevertheless, assuming that all the parties are informed on the different options it should be hoped that countries will make a reasonable decision such that they opt for option 2.

Hence, for the regional option, one needs to show the ministries' representatives that they will earn per diem and capacity building if the regional option is adopted, while

36 Actual price on the market lies between US\$ 10 and US\$ 15.

nothing is earned, when they reject it. Therefore *per diem and capacity buildings* are the main incentives that will likely make ministries' representative opt for the economically efficient option.

From what has been said so far the research recommends that, in order to give the CDM a chance in the region, one option will be a cost-effective institutions building at the regional (WAEMU) level: the Regional Approval Body.

9 CONCLUSIONS

From what has been discussed so far, the DNA's operation is linked to important tasks which require specific skills. Hence, capacity building is crucial to guarantee a proper operation of the DNA. Nonetheless, a proper capacity building programme as shown in the Moroccan case (see Chapter 3) has until now not taken place. Furthermore, the analysis of the existing DNA structures reveals that the two-tiered structure is cost efficient compared to the single office. Hence, the two-tiered structure with a permanent secretariat based on limited personnel that deal with current activities of the DNA and a committee or office that meets to decide on rules for CDM projects is retained in the regional approval body's context. In fact, the permanent secretariat will deal with the DNA operation and approve CDM projects, while initially each country of the WAEMU will define sustainability criteria by decision of a committee on the national level. This model has the advantage that first, stakeholders will have the opportunity to be involved in the capacity building programme, which they probably would not have otherwise. Second, local stakeholders have the possibility of participating actively in the CDM process.

In addition, the RAB is economically efficient, as a least-cost regional capacity building programme can be provided to the countries and relatively cost efficient CERs can be issued to the CDM investors involved. In sum, the RAB represents the social optimum which will maximise social welfare. Still, it is likely that the concerned countries might not opt for this economically efficient option. In effect, very often the interests of different stakeholders involved in the process could motivate the choice of an option different from what the common sense judges to be economically efficient. This is the notion of political efficiency. In order to analyse the stakeholders' behaviour and suggest suitable recommendations to foresee a better co-operation between stakeholders, the following section analyses the stakeholders' behaviour and utility maximisation strategy based on the New Political Economy theory.

The analysis of the stakeholders' utility function and maximisation strategy shows that there is a potential conflict between the ministries' representatives and the permanent secretariat at the WAEMU level, as both would like to administer the DNA budget. Moreover, they have the same utility function and utility maximisation strategy. Furthermore, the RAB's objective does not diverge from the social optimum which is the regional option, while that of ministries' representatives diverge strongly from it when they opt for the national DNA option which is the political optimum. As ministries' representatives have more power in the decision in favour or not of the regional option, incentives in the form of per diem and capacity building should be provided in order to conciliate their objective with the social optimum. Hence, *the same per diem and capacity building programme in both regional and national DNA* could be a solution.

The other stakeholders have, in contrast, weaker power in the decision on the option to be chosen, and their objective does not diverge from the social optimum. Theoretically, they will likely be in favour of the regional DNA.

REFERENCES

Arrow, Kenneth (1963):

Social Choice and Individual Values, Yale University Press, New Have.

Banuri, Tariq; Gupta, Sujata (2000):

The Clean Development Mechanism and Sustainable Development: an economic analysis. In: P. Ghosh (Ed.), Implementation of the Kyoto Protocol, Asian Development Bank, Manila, pp. 73–101.

Banuri, Tariq; Weyant, John (2001)

Setting the stage: climate change and sustainable development. In: Metz, et al. (eds.) Climate Change Mitigation, Cambridge UP, http://www.grida.no/climate/ipcc_tar/wg3/048.htm (20.10.2005)

Cheung Steven N. S. (1992)

The New Institutional Economics - Contract Economics, L. Werin and H. Wijkander (eds.), Basil Blackwell, pp. 48-65.

Coase, Ronald H. (1960):

The Problem of Social Cost, Journal of Law and Economics 2, 1, pp. 1-40.

Dang, Hanh; Michaelowa, Axel; de Jong, Friso (2006):

From GHGs Abatement Potential to Viable CDM Projects – The Case of Cambodia, Lao PDR and Vietnam, HWWA Report 259, Hamburg.

Ellis, Jane; Corfee-Morlot, Jan; Winkler, Harald (2004):

Taking Stock of Progrss Under The Clean Development Mechanism (CDM), OECD, Paris

Figueres, Christiana; Olivas, Helen (2002):

Evolution of National Authorities for the CDM, Center For Sustainable Development in The Americas, in: Figueres, Christiana (ed.): Establishing National Authorities for The CDM. A Guide for Developing Countries, International Institute For Sustainable Development and the Center for Sustainable Development in the Americas, pp. 33-49.

Figueres, Christiana; (2002):

The Operation of the CDM, Center For Sustainable Development in The Americas, in: Figueres, Christiana (ed.): Establishing National Authorities for The CDM. A Guide for Developing Countries, International Institute For Sustainable Development and the Center for Sustainable Development in the Americas, pp. 2132.

Figueres, Christiana (2004):

Institutional Capacity to Integrate Economic Development and Climate Change Considerations: An Assessment of DNAs in Latin America and the Caribbean, Inter American Development Bank, Washington DC.

Frey, Bruno S. (1985):

Internationale Politische Ökonomie, München.

Frey, Bruno S. (1990):

Ökonomie ist Sozialwissenschaft. Die Anwendung der Ökonomie auf neue Gebiete, München.

Furubotn, Eirik G.; Richter, Rudolf (1991):

The New Institutional Economics: An Assessment, in E. G. Furubotn and R. Richter, (eds.), The New Institutional Economics, Tübingen, pp. 1-32

Furubotn, Eirik G.; Richter, Rudolf (2000):

Institutions and Economic Theory – The Contribution of New Institutional Economics, The University of Michigan Press, Michigan.

Guerrien, Bernard (2002):

Dictionnaire d'Analyse Economique - 3e Edition, La Découverte, Paris.

Holzinger, Katharina (1994):

Umweltpolitische Entscheidungsprozesse in der Europäischen Gemeinschaft am Beispiel der Pkw-Abgase, Berlin.

Krey, Matthias (2004):

Transaction Costs of CDM Projects in India – An Empirical Survey, HWWA Discussion Paper, Hamburg.

Little, Ian (1956):

A Critique of Welfare Economics - 2nd ed., Oxford University Press, Oxford.

Michaelowa, Axel (2003):

CDM Host Country Institution Building, in: Mitigation and Adaptation Strategies for Global Change, 8, pp. 201-220.

Michaelowa, Axel (2004):

Non-government funding options for DNA, Unpublished.

Michaelowa, Katharina (1998):

Die Neue Politische Ökonomie Liefergebundener Entwicklungshilfe, Baden-Baden: Nomos.

Michaelowa, Katharina (2003):

The Political Economy of The Enhanced HIPEC-Initiative, Public Choice 114, pp. 461-476.

Pearman, Roger; Ma, Yue; McGilvray, James; Common, Michael (1999):

Natural Resource & Environmental Economics, 2nd. Edition, Pearson Education Ltd. Towards Neutrality: A Proposal for Sustainability at the University of Melbourne,
http://www.union.unimelb.edu.au/environment/PDF/towards_neutrality.pdf

Soares, Marcus. V. B (2004):

Reducing Transaction Costs in Information Infrastructures using FLOSS, 4S/EASST Conference, Paris, France, August 26-28.

Sutter, Christoph; Carlos Parreno, Juan (2005):

Does the Current Clean Development Mechanism Deliver ist Sustainable Development Claim?, Paper Presented at the International Conference: Climate or Development?, HWWA, Hamburg.

Teuscher, Micha (1995):

Politisch-ökonomische Analyse der Umsetzung umweltpolitischer Maßnahmen in der Landwirtschaft, Frankfurt.

UNEP (2004):

CDM Information and Guidebook,
<http://cd4cdm.org/Publications/cdm%20guideline%202nd%20edition.pdf>
(15.03.2005).

UNFCCC (2006):

Designated National Authorities (DNA), <http://cdm.unfccc.int/DNA> (14.02.2006)

Vaubel, Roland (1991):

The Political Economy of the International Monetary Fund: A Public Choice Analysis. In Vaubel, R. and Willett, T.D. (Eds.), The Political Economy of International Organisations, 204-244. Boulder: Westview Press.

Williamson, Oliver E. (1991):

Economic Institutions: Spontaneous and Intentional Governance, Journal of Law, Economics, & Organization, 7, Special Issue, pp. 159-187.

Williamson, Oliver E. (1993):

Transaction Costs of Economics and Organisation Theory, *Industrial and Corporate Change* 2, 10, pp. 7-56

Williamson, Olliver E. (1996):

“The Mechanisms of Governance.“, New York, NY, Oxford University Press.

Woerdman, Edwin (2002):

Implementing the Kyoto mechanisms: political barriers and path dependence, University of Groningen, Groningen.

APPENDIX: DETAILS ON DNA TRANSACTION COSTS ASSESSMENT

APPENDIX 1: DNA COST DETAILS AT COUNTRY LEVEL

Table 1: Draft DNA budget for one year (assuming 2 projects submitted per year)

Budget line	Item and quantity	Cost per unit	Total cost
Board			US\$ 2,600
Statutory minimum	2 meetings per year, 10 members*	Fee US\$ 65 per person per day	US\$ 1,300
Extra meetings if there are projects	2 meetings per year, 10 members	Fee US\$ 65 per person per day	US\$ 1,300
Secretariat			US\$ 34,000
Executive secretary (wage)	Gross wage	US\$ 12,000	US\$ 12,000
Communication and logistics manager	Gross wage	US 8,000	US\$ 8,000
Secretary and bookkeeping	Gross wage	US\$ 6000	US\$ 6,000
Office equipment	US\$ 4,000 for IT, US\$ 2,000 for furniture etc.	Cost spread over 2 years	US\$ 3,000
Web site contract (design and updating of content)	US\$ 1,000 per project, up to a maximum of US\$ 5,000		US\$ 5,000
Capacity building			US\$ 20,625
Attendance fee	15 participants	US\$ 65 per person (15 days)	US\$ 14,625
Experts fees	1 expert regional expert	US\$ 400 per day (15 days)	US\$ 6,000
Stakeholder forums			US\$ 5,800
Attendance fee 1 unique meeting	22 participants to agree on SD criteria	US\$ 65 per person	US\$ 1,430
Attendance fee (2 projects)	22 participants (22 per country)	US\$ 65 per person	US\$ 2,860
Room rent	Meeting room for 22 participants, 3 meetings one unique and 2 for 2 projects assessment	US\$ 500 per meeting	US\$ 1,500
Expert groups	-	-	US\$ 5,250
Fees	1 report by 2 experts for every project up to 2 per year, and for every 2nd project above 5 reports (i.e. 7.5 assignments)	US\$ 500 per assignment	US\$ 2,000
Communication, auditing etc. (2,000 + 10% other variable costs, 3,000)		-	US\$ 5,000
Total	-	-	US\$ 73,500

Source: Adapted from Michaelowa (2004)

APPENDIX 2:DNA COST DETAILS AT REGIONAL LEVEL

Table 2: Draft regional approval body's budget for one year (assuming 8 projects submitted per year)

Budget line	Item and quantity	Cost per unit	Total cost
Board			US\$ 3,250
Statutory minimum	2 meetings per year 5 members	Fee US\$ 65 per person per day	US\$ 650
Extra meetings if there are projects	8 meetings per year 5 members	Fee US\$ 65 per person per day	US\$ 2,600
Secretariat			US\$ 34,000
Executive secretary (1 personnel)	Gross wage	US\$ 12,000	US\$ 12,000
Methodology officer (2 personnel)	Gross wage	12,000	24,000
Communication and logistics manager (1 personnel)	Gross wage	US 8,000	US\$ 8,000
Secretary and bookkeeping (1 personnel)	Gross wage	US\$ 6000	US\$ 6,000
Office equipment	US\$ 4,000 for IT, US\$ 2,000 for furniture etc.	Cost spread over 2 years	US\$ 3,000
Web site contract (design and updating of content)	US\$ 1,000 per project, up to a maximum of US\$ 5,000		US\$ 5,000
Capacity building			US\$ 46,500
Attendance fee	40 participants	US\$ 65* per person (15 days)	US\$ 39,000
Experts fees	1 regional expert	US\$ 250 per day (30 days)	US\$ 7,500
Stakeholder forums			US\$ 18,410
Attendance fee 1 unique meeting	96 participants to agree on SD criteria (12 participants per country)	US\$ 35 per person	US\$ 3,360
Attendance fee (2 projects)	2 x 12 participants (12 per country)	US\$ 35 per person	US\$ 1,050
Room rent	Meeting room for 96 participants (capacity building 2x15 days – US\$ 12,000) Meeting room for 12 participants (Sustainability criteria definition in each country 1 day – US\$ 200 x 8) Meeting room for 15 participants (for 2 projects assessment, together with the NDA secretariat - US\$ 200 x2)	US\$ 400 per meeting US\$ 200 US\$ 200	US\$ 14,000
Travel costs	regional expert (US\$ 1,000) 74 participants (US\$ 7,400) 5 regional DNA members (US\$ 2,500)	-	US\$ 10,900
Expert groups			US\$ 7,500
Fees	1 report by 2 experts for every project up to 8 per year, and for every 2nd project above 8 reports (i.e. 16 assignments)	US\$ 500 per assignment	US\$ 8000
Communication, auditing etc. (US\$ 2,000 + 10% other variable costs, US\$ 9,000)			US\$ 11,000
Total	-	-	US\$ 157,000

Attendance fee is US\$ 65/participant when regional events are organised.

Source: Adapted from Michaelowa (2004)