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NETSSAF

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Thematic Priority: Global Change and Ecosystems

D17: Classification of Typical Settlements

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PU	Public	
PP	Restricted to other programme participants (including the Commission Services)	
RE	Restricted to a group specified by the consortium (including the Commission Services)	
CO	Confidential, only for members of the consortium (including the Commission Services)	x

1 INTRODUCTION

1.1 Description of the sub task

This document presents a classification of settlements in rural and peri-urban areas in West Africa that typically lack access to improved sanitation. This activity evolved from a general selection of potential study areas carried out by task team 2.1 and an assessment of the selected areas, by task team 2.2 based on criteria developed in WP1. Using the information provided by these two groups, a clear and comprehensive classification of settlements in the region, based sanitation practices (no access), and is presented (D17).

1.2 Specific objective.

Classify typical settlements with no access to improved sanitation in order to identify typical cases for the purpose of assigning appropriate sanitation options.

2 Methods

The task began with a derivation of qualitative and numerical criteria for creating groups within the classification. The numerical criteria were derived from a detailed inspection of the distributional characteristics of the data supplied by Task group 2.2. The next step involved defining (improved sanitation), identifying sanitation service delivery levels for peri-urban areas, small towns, villages, farm settlements (harmlets) and isolated dwellings that make up the settlement pattern in the regions under consideration based on the information supplied by task group 2.2. With this information, a single, clear, underlying concept for the classification was proposed. Then a comprehensive classification of the settlements was constructed, according to similarities found. That is, repeated patterns were identified tabulated following strictly the concept set out for the classification.

3 Results

3.1 Concept of classification of typical settlements

From the 18 countries initially proposed in the NETSSSAF project document, which were divided into 3 zones (Zone A: Mauritania, Mali, equatorial guinea, Niger and Nigeria; Zone B: Senegal, Bissau Guinea, Guinea, Gambia, Sierra Leone, Liberia and Ivory Coast and zone C: Burkina Faso, Togo, Benin, Ghana and Sao and Principe), an initial study aimed at identifying and selecting potential study areas (D05) of the project was undertaken leading to the identification of 63 sites. The analysis carried out on these preliminary results made it possible to notice that:

- West Africa as well has wet and dry rural and periurban areas
- The populations were mainly Muslim or Christian and/or mixed (Christian-Muslim) on certain sites,
- There was a strong potential with the practice of the truck farming of proximity on fields with or without the recycling of used water.

In all, 24 were sites were assessed in 12 rural areas and 12 periurban settlements with:

- 6 in rural dry
- 6 in rural wet
- 6 in periurban dry
- 6 in periurban wet

The investigations took place in 11 countries including the 7 countries in which the workshops shall be held. The steps in the selection of the sites is schematized below and detailed in table 2.

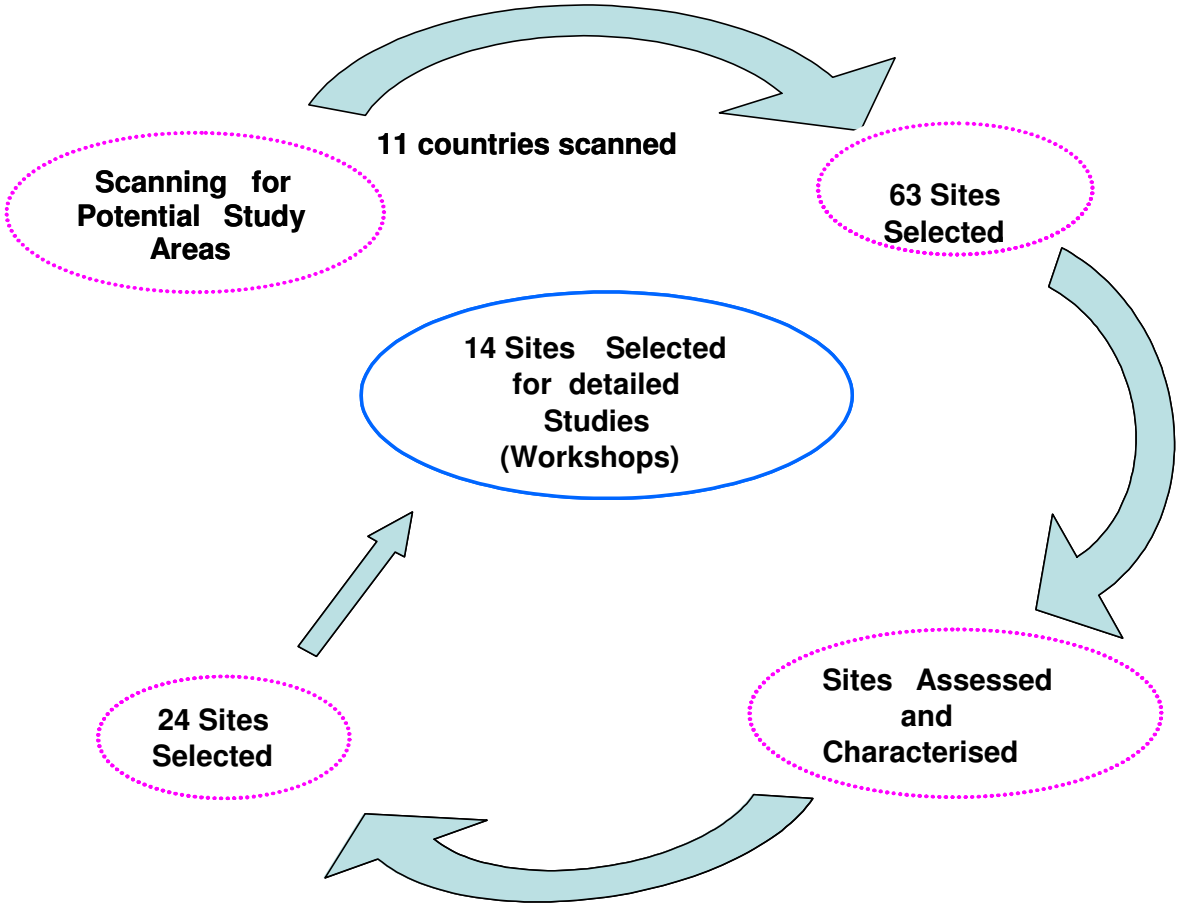

Figure 1: Site Selection

Table 1: Summary of NETSSAF project sites selection

Initially (task 2.1/D 05)	1st Classification of sites for characterization (task 2.2/D13, D 15)	Further Investigations, In other tasks (2.4, 8.1 and 8.4), WPs 4 and 5
63 potential project sites	24 sites characterized	14 sites
11 Countries (Mauritania, Mali, equatorial guinea, Niger; Senegal, Bissau Guinea, Côte d'ivoire , Burkina Faso, Togo, Benin, Ghana)	11 Countries (Mauritania, Mali, equatorial guinea, Niger; Senegal, Bissau Guinea, Côte d'ivoire , Burkina Faso, Togo, Benin, Ghana)	7 countries (Mauritania, Mali, Niger; Senegal, Côte d'ivoire , Burkina Faso, Ghana)

The subsequent methodological steps to classify settlements of the 24 cases studied are proposed as follows:

- Rural zones – dry - which are predominantly Moslems
- Rural zones – wet - which are predominantly Moslems
- Rural zones - dry - which are predominantly Christians
- Rural zones - wet - which are predominantly Christians
- Peri-urban zones – dry - which are predominantly of Moslems
- Peri-urban zones - wet - which are predominantly of Moslems
- Peri-urban zones - dry - which are predominantly Christians
- Peri-urban zones – wet- which are predominantly Christians.

On the basis of the location of the sites; the number of areas to be studied in detail was allocated to the local partners as shown (see table 2).

Table 2: Distribution of the final project sites per local partner

Local partner	Number of project sites	Country
BOATA	4	Mali/Niger
CREPA	2	Mauritania
UAA	2	Ivory Coast
KNUST	2	Ghana
CEPAPE	-	Burkina Faso
Ville de Sya	1	Burkina Faso
MATAM	3	Senegal
Total	14	

3.2 Criteria for the Classification of typical settlements

Out of the 75 criteria used for characterising the 24 sites presented in table 2 of D15, a number of them standout as the most relevant (showing a repeated occurrence across most of the sites) and have been selected as instruments/criteria for carrying out the classification of typical settlements. It is also to be noted that these criteria fall within the nine main items of the questionnaire used to characterise the sites in task 2.2 (D15).

These criteria have been selected based on the fact that, they are the major characteristics satisfied by most of the sites: one or at least the two principal groups. These (repeatable) criteria are presented in the following table.

Table 4: Typical Characteristics in rural/peri-urban settlements as assessed in D15

Criteria	Characteristics	Description
Environment	Soil	Sandy
		Loamy
		Rocky
	Floods	Frequent
		Occasional
	Topography	Flat
		Ondulated
	Groundwater table	Low
		Moderate
		High
	Availability of water for use	High
		Low
Human Landscape	Settlement pattern	Dispersed (Scattered houses)
		Nucleated (small number of clustered houses)
		Densily nucleated (large number of clustered houses)
	Settlement accessibility	Pedestrial
		Motorable
	Existing infrastructure in water supply	Wells
		Hand pumps
		Wells and Hand pumps
		Tap water
		Mixed
	Reliability in existing energy infrastructure	High
		Moderate
		Low
Economics	Relative wealth	Low
		Medium
		High
	Production sector	Primary (agriculture)
		Secondary (industry)
		Trade and services
	Land and housing ownership	Owned
		Rented
	% of income used for sanitation services	Low
		Medium
		High
Institutional and Legal Framework	Decision making and sanitation strategy formulation	Formal
		Traditional
	Community involvement/participation	Low
		Medium
		High
	Advocacy by NGOs and civil society	Low
		High
	Responsibility for financing	National/Municipalities/State
		Communities/Households
Potential for reuse	Collection of nightsoil	Low
		High
	Local practices of fertilization	Animal manure
		Chemical fertilizers

		Animal manure/ chemical fertilizer
		None
	Land for crop production	Low
		Medium
		High
	Distance to crop production site	Far
		Medium
		Near
Social Issues	Acceptability of innovations	Low
		High
	Literacy	Primary
		Secondary
		Professional
	Awareness of personal and domestic hygiene practices in the settlement	High
		Moderate
		Low

A crossing table of these criteria, with those defined in the 8 typical zones (see in 3.1) led to the following table 5.

Table 5: Classification of typical settlements

			Rural area				Peri-urban			
Criteria	**Characteristics**	**Description**	**RDM**	**RWM**	**RDC**	**RWC**	**PUDM**	**PUWM**	**PUDC**	**PUWC**
Environment	Soil	Sandy	Dogona (BF) Agnan Civol (SN)			Rosso (MR)	Macina (Ml) Hay Saken (MR) Kobore (GH) Matam (SN)		Antula (GB) Loumbila (BF)	Santa Maria (GE)
		Loamy	Molodo (Ml) Nafonga (Ml)	Ashakoko (GH)	Sémé Podji (BJ)	Eduaden (GH)		Dedesua (GH)		Songon (CI)
		Rocky	Prikro (CI)		Tiassalé (CI) Vy (BF)		Tsernaoua (RN) Sinkasé (TG)	Anyma (CI)	Save (BJ)	
	Floods	Frequent	Prikro (CI) Molodo (Ml) Dogona (BF)		Tiassalé (CI) Sémé Podji (BJ)			Anyma (CI)		Songon (CI)
		Occasional	Nafonga (Ml) Agnan Civol (SN)	Ashakoko (GH)	Vy (BF)	Rosso (MR) Eduaden (GH)	Macina (Ml) Tsernaoua (RN) Hay Saken (MR) Kobore (GH) Matam (SN) Sinkasé (TG)	Dedesua (GH)	Antula (GB) Save (BJ) Loumbila (BF)	Santa Maria (GE)

	Topography	Flat	Prikro (CI) Nafonga (MI) Agnam Civol (SN)	Ashakoko (GH)	Tiassalé (CI) Sémé Podji (BJ) Vy (BF)	Rosso (MR)	Macina (MI) Tsernaoua (RN) Hay Saken (MR) Kobore (GH) Matam (SN) Sinkasé (TG)	Anyma (CI)	Loumbila (BF)	Songon (CI)
		Ondulated	Molodo (MI) Dogona (BF)			Eduaden (GH)		Dedesua (GH)	Antula (GB) Save (BJ)	Santa Maria (GE)
	Groundwater table	Low				Eduaden (GH)	Kobore (GH) Sinkasé (TG)	Dedesua (GH)	Loumbila (BF)	
		Moderate	Prikro (CI) Agnam Civol (SN) Dogona (BF)	Ashakoko (GH)	Vy (BF)	Rosso (MR)	Macina (MI) Hay Saken (MR) Matam (SN)		Antula (GB) Save (BJ)	Santa Maria (GE)
		High	Nafonga (MI) Molodo (MI)		Tiassalé (CI) Sémé Podji (BJ)		Tsernaoua (RN)	Anyma (CI)		Songon (CI)
	Availability of water for use	High	Prikro (CI) Nafonga (MI)		Tiassalé (CI) Sémé Podji (BJ)		Macina (MI) Tsernaoua (RN)	Anyma (CI)	Antula (GB)	Songon (CI) Santa Maria (GE)
		Low	Molodo (MI) Agnam Civol (SN) Dogona (BF)	Ashakoko (GH)	Vy (BF)	Rosso (MR) Eduaden (GH)	Hay Saken (MR) Kobore (GH) Matam (SN) Sinkasé (TG)	Dedesua (GH)	Save (BJ) Loumbila (BF)	

Human Landscape	Settlement pattern	Dispersed (Scattered houses)					Sinkasé (TG)			
		Nucleated (small number of clustered houses)	Prikro (CI) Nafonga (MI) Molodo (MI) Agnam Civol (SN)		Tiassalé (CI) Vy (BF)	Rosso (MR) Eduaden (GH)	Macina (MI) Tsernaoua (RN) Hay Saken (MR) Kobore (GH)	Anyma (CI) Dedesua (GH)	Save (BJ)	Songon (CI)
		Densily nucleated (large number of clustered houses)	Dogona (BF)	Ashakoko (GH)	Sémé Podji (BJ)		Matam (SN)		Antula (GB) Loumbila (BF)	Santa Maria (GE)
	Settlement accessibility	Pedestrial								
		Motorable								
	Existing infrastructure in water supply	Wells					Tsernaoua (RN)			
		Hand pumps	Nafonga (MI)		Vy (BF)		Hay Saken (MR) Matam (SN)		Save (BJ)	
		Wells and Hand pumps	Molodo (MI)	Ashakoko (GH)		Eduaden (GH)	Sinkasé (TG) Macina (MI) Kobore (GH)	Dedesua (GH)	Antula (GB)	Santa Maria (GE)
		Tap water	Prikro (CI)		Tiassalé (CI) Sémé Podji (BJ)					Songon (CI)
		Mixed	Agnam Civol (SN) Dogona (BF)			Rosso (MR)		Anyma (CI)	Loumbila (BF)	
	Reliability in existing	High								

	energy infrastructure	Moderate	Nafonga (MI) Molodo (MI) Prikro (CI)		Tiassalé (CI) Sémé Podji (BJ)		Tsernaoua (RN)	Anyma (CI)	Antula (GB)	Santa Maria (GE) Songon (CI)
		Low	Agnam Civol (SN) Dogona (BF)	Ashakoko (GH)	Vy (BF)	Eduaden (GH) Rosso (MR)	Hay Saken (MR) Matam (SN) Sinkasé (TG) Macina (MI) Kobore (GH)	Dedesua (GH)	Save (BJ) Loumbila (BF)	
Economics	Relative wealth	Low	Molodo (MI) Prikro (CI) Agnam Civol (SN) Dogona (BF)	Ashakoko (GH)	Tiassalé (CI) Sémé Podji (BJ) Vy (BF)	Eduaden (GH) Rosso (MR)	Hay Saken (MR) Matam (SN) Sinkasé (TG) Macina (MI) Kobore (GH)	Dedesua (GH) Anyma (CI)	Save (BJ) Loumbila (BF) Antula (GB)	Santa Maria (GE) Songon (CI)
		Medium	Nafonga (MI)				Tsernaoua (RN)			
		High								
	Production sector	Primary (agriculture)	Molodo (MI) Prikro (CI) Agnam Civol (SN) Dogona (BF) Nafonga (MI)	Ashakoko (GH)	Tiassalé (CI) Sémé Podji (BJ) Vy (BF)	Eduaden (GH) Rosso (MR)	Hay Saken (MR) Matam (SN) Sinkasé (TG) Macina (MI) Tsernaoua (RN) Kobore (GH)	Dedesua (GH) Anyma (CI)	Save (BJ) Loumbila (BF) Antula (GB)	Santa Maria (GE) Songon (CI)
		Secondary (industry)								

		Trade and services								
	Land and housing ownership	Owned	Molodo (MI) Prikro (CI) Agnam Civol (SN) Dogona (BF) Nafonga (MI)		Tiassalé (CI) Sémé Podji (BJ) Vy (BF)	Rosso (MR)	Matam (SN) Sinkasé (TG) Macina (MI) Tsernaoua (RN)	Anyma (CI)	Save (BJ) Loumbila (BF) Antula (GB)	Songon (CI)
		Rented		Ashakoko (GH)		Eduaden (GH)	Hay Saken (MR) Kobore (GH)	Dedesua (GH)		Santa Maria (GE)
	% of income used for sanitation services	Low	Molodo (MI) Prikro (CI) Agnam Civol (SN) Dogona (BF) Nafonga (MI)	Ashakoko (GH)	Tiassalé (CI) Sémé Podji (BJ) Vy (BF)	Eduaden (GH) Rosso (MR)	Hay Saken (MR) Matam (SN) Sinkasé (TG) Macina (MI) Tsernaoua (RN) Kobore (GH)	Dedesua (GH) Anyma (CI)	Save (BJ) Loumbila (BF)	Songon (CI)
		Medium								
		High							Antula (GB)	Santa Maria (GE)
Legal and institutional	Decision making and sanitation strategy formulation	Formal								
		Traditional								
	Community involvement/participation	Low								
		Medium								
		High								
	Advocacy by NGOs and	Low								

	civil society	High								
	Responsibility for financing	National/Municipalities/State								
		Communities/Households								
Potential for reuse	Collection of nightsoil	Low	Molodo (MI) Prikro (CI) Agnam Civol (SN) Dogona (BF) Nafonga (MI)	Ashakoko (GH)	Tiassalé (CI) Sémé Podji (BJ) Vy (BF)	Eduaden (GH) Rosso (MR)	Hay Saken (MR) Matam (SN) Sinkasé (TG) Macina (MI) Tsernaoua (RN) Kobore (GH)	Dedesua (GH) Anyma (CI)	Save (BJ) Loumbila (BF) Antula (GB)	Santa Maria (GE) Songon (CI)
		High								
	Local practices of fertilization	Animal manure	Agnam Civol (SN)			Eduaden (GH) Rosso (MR)	Sinkasé (TG) Kobore (GH)	Dedesua (GH)	Loumbila (BF)	
		Chemical fertilizers		Ashakoko (GH)			Hay Saken (MR) Matam (SN) Macina (MI)		Antula (GB)	Santa Maria (GE)
		Animal manure/ chemical fertilizer	Molodo (MI) Dogona (BF) Nafonga (MI)		Vy (BF)		Tsernaoua (RN)		Save (BJ)	
		None	Prikro (CI)		Tiassalé (CI) Sémé Podji (BJ)			Anyma (CI)		Songon (CI)
	Land for crop production	Low					Sinkasé (TG)			

							Kobore (GH)			
		Medium	Agnam Civol (SN) Dogona (BF)		Sémé Podji (BJ)	Eduaden (GH) Rosso (MR)		Dedesua (GH)	Loumbila (BF)	
		High	Molodo (Ml) Nafonga (Ml) Prikro (CI)	Ashakoko (GH)	Vy (BF) Tiassalé (CI)		Hay Saken (MR) Matam (SN) Macina (Ml) Tsernaoua (RN)	Anyma (CI)	Antula (GB) Save (BJ)	Santa Maria (GE) Songon (CI)
	Distance to crop production site	Far	Prikro (CI)	Ashakoko (GH)	Sémé Podji (BJ) Tiassalé (CI)		Hay Saken (MR) Matam (SN)	Anyma (CI)	Antula (GB)	Santa Maria (GE) Songon (CI)
		Medium	Agnam Civol (SN) Dogona (BF) Molodo (Ml) Nafonga (Ml)		Vy (BF)	Eduaden (GH) Rosso (MR)	Macina (Ml) Tsernaoua (RN)	Dedesua (GH)	Loumbila (BF) Save (BJ)	
		Near					Sinkasé (TG) Kobore (GH)			
Social Issues	Acceptability of innovations	Low	Dogona (BF)						Loumbila (BF)	
		High	Molodo (Ml) Prikro (CI) Agnam Civol (SN) Nafonga (Ml)	Ashakoko (GH)	Tiassalé (CI) Sémé Podji (BJ) Vy (BF)	Eduaden (GH) Rosso (MR)	Hay Saken (MR) Matam (SN) Sinkasé (TG) Macina (Ml) Tsernaoua (RN)	Dedesua (GH) Anyma (CI)	Save (BJ) Antula (GB)	Santa Maria (GE) Songon (CI)

							Kobore (GH)			
	Literacy	Primary	Molodo (MI) Prikro (CI) Agnam Civol (SN) Dogona (BF) Nafonga (MI)	Ashakoko (GH)	Tiassalé (CI) Sémé Podji (BJ) Vy (BF)	Eduaden (GH) Rosso (MR)	Hay Saken (MR) Matam (SN) Sinkasé (TG) Macina (MI) Tsernaoua (RN) Kobore (GH)	Dedesua (GH) Anyma (CI)	Save (BJ) Loumbila (BF) Antula (GB)	Santa Maria (GE) Songon (CI)
		Secondary								
		Professional								
	Awareness of personal and domestic hygiene practices in the settlement	High	Agnam Civol (SN) Dogona (BF) Nafonga (MI)	Ashakoko (GH)	Vy (BF)	Eduaden (GH) Rosso (MR)	Hay Saken (MR) Matam (SN) Macina (MI) Tsernaoua (RN) Kobore (GH)	Dedesua (GH)	Save (BJ) Loumbila (BF)	
		Moderate	Molodo (MI)				Sinkasé (TG)			
		Low	Prikro (CI)		Tiassalé (CI) Sémé Podji (BJ)			Anyma (CI)	Antula (GB)	Santa Maria (GE) Songon (CI)

Bf: **Burkina Faso,**

Gw: **Bissau Guinea,**

Gq: **Equatorial Guinea,**

Ci: **Ivory Coast,**

Bj: **Benin,**

Gh: **Ghana,**

Mr: **Mauritania,**

Ml: **Mali**

RDM: **Rural dry Muslim,**

RWM: **Rural wet Muslim,**

RDC: **Rural dry Christian,**

RWC: **Rural wet Christian,**

PUDM: **Peri-urban dry Muslim,**

PUWM: **Peri-urban wet Muslim,**

PUDC: **peri-urban dry Christian,**

PUWC: **Peri-urban wet Christian.**

4 Conclusion.

Within the framework of NETSSAF the development of a decision making support tool and a strategy for implementation are envisaged. Most importantly, a mapping of sanitation technologies according to profiles of communities, with a typical lack of access to improved sanitation as key criterion, will be undertaken. To this end, an assessment of settlements within the West African sub-region was necessary and a classification of the settlements based on characteristics judged to be typical across a majority of the settlements will constitute an essential ingredient for realising the above tasks, especially the assignment of technologies on the basis of settlements' profiles. Furthermore, this classification will allow for the selection of typical study cases which is foreseen in task 2.4.