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How the farmers of El Guerdane (Morocco) integrate the diminution of water access and the new schemes of watersharing for drop irrigation

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Comment se sont adaptés les agriculteurs d'El Guerdane (Maroc) à la diminution de l'accès à l'eau et à la mise en place d'un système de distribution d'eau pour l'irrigation localisé ?

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Presentation outlines

1. The context of Guerdane
2. History of successive schemes
3. The new project of Guerdane
4. Effects of the new paradigmes
5. Colateral projects for small farmers
6. conclusion

Plan de la Présentation

1. Le contexte de Guerdane
2. Histoire des aménagements hydro-agricoles successifs
3. Le nouveau projet de Guerdane
4. Les effets des nouveaux paradigmes
5. Les projets colatéraux pour les petits producteurs
6. conclusion

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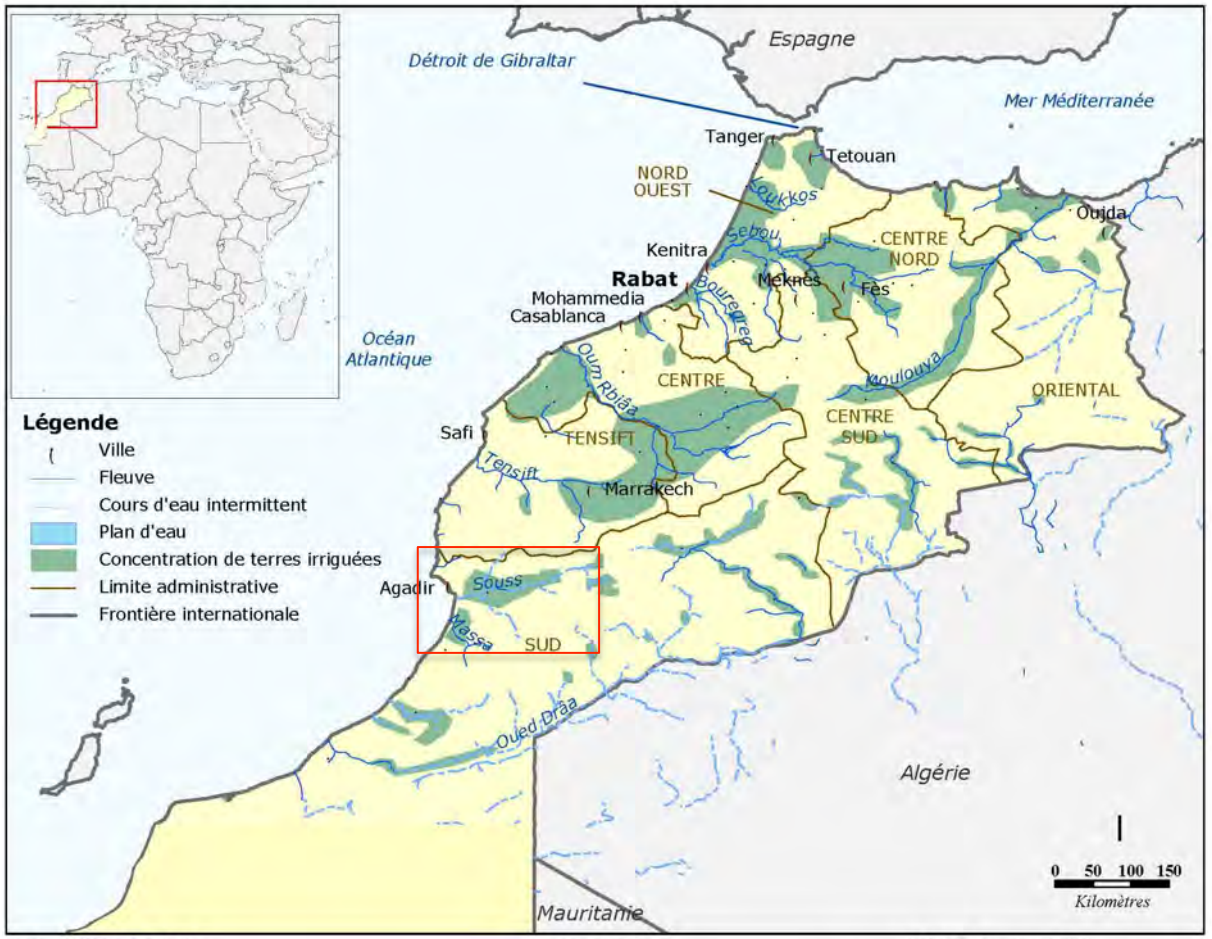
1. The context of Guerdane



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1.The context of Guerdane
Several Irrigated zones and systems

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1. The context of Guerdane
A specific central scheme with orange trees

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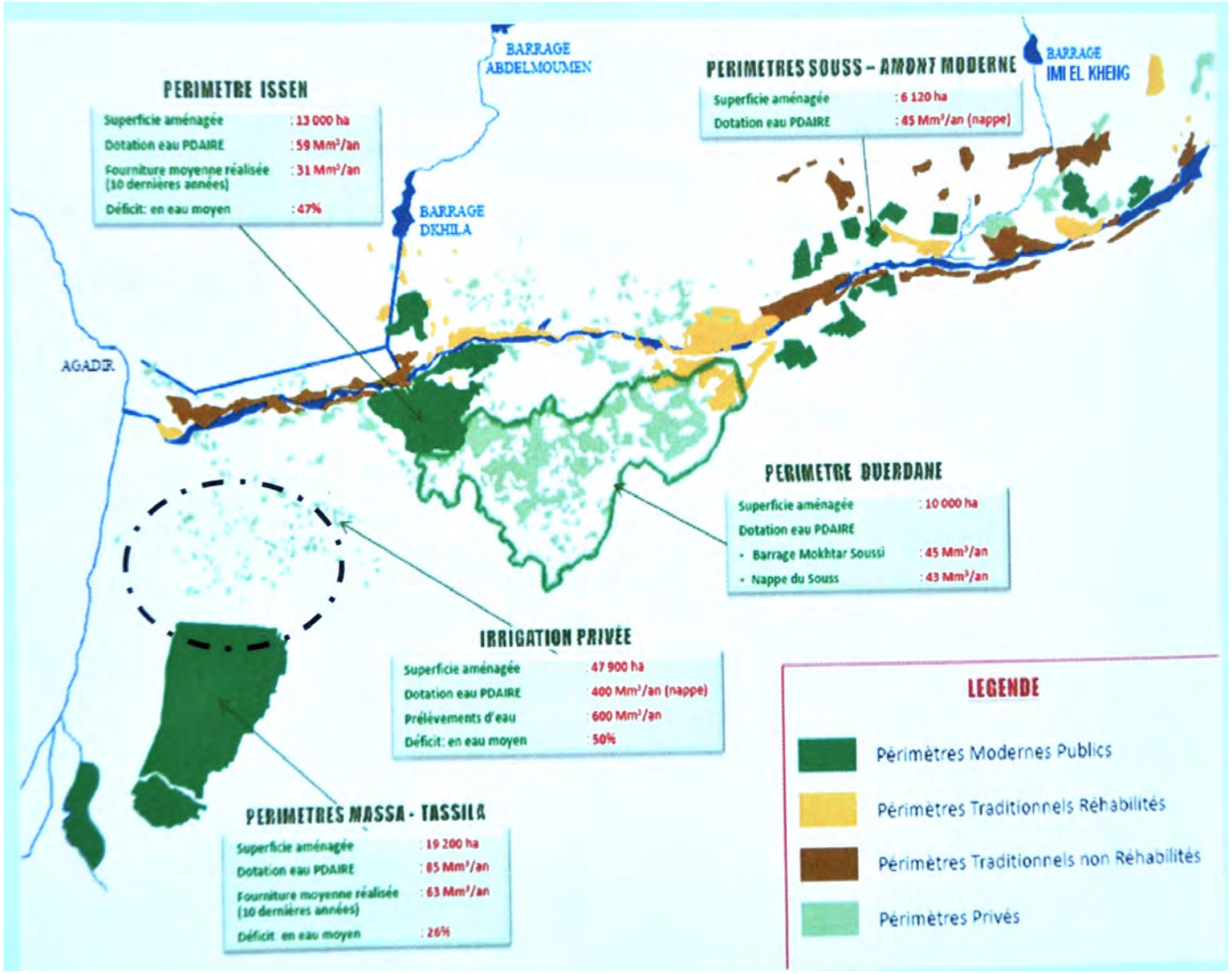
1. The context of Guerdane

Different water resources (surface and grounwater)



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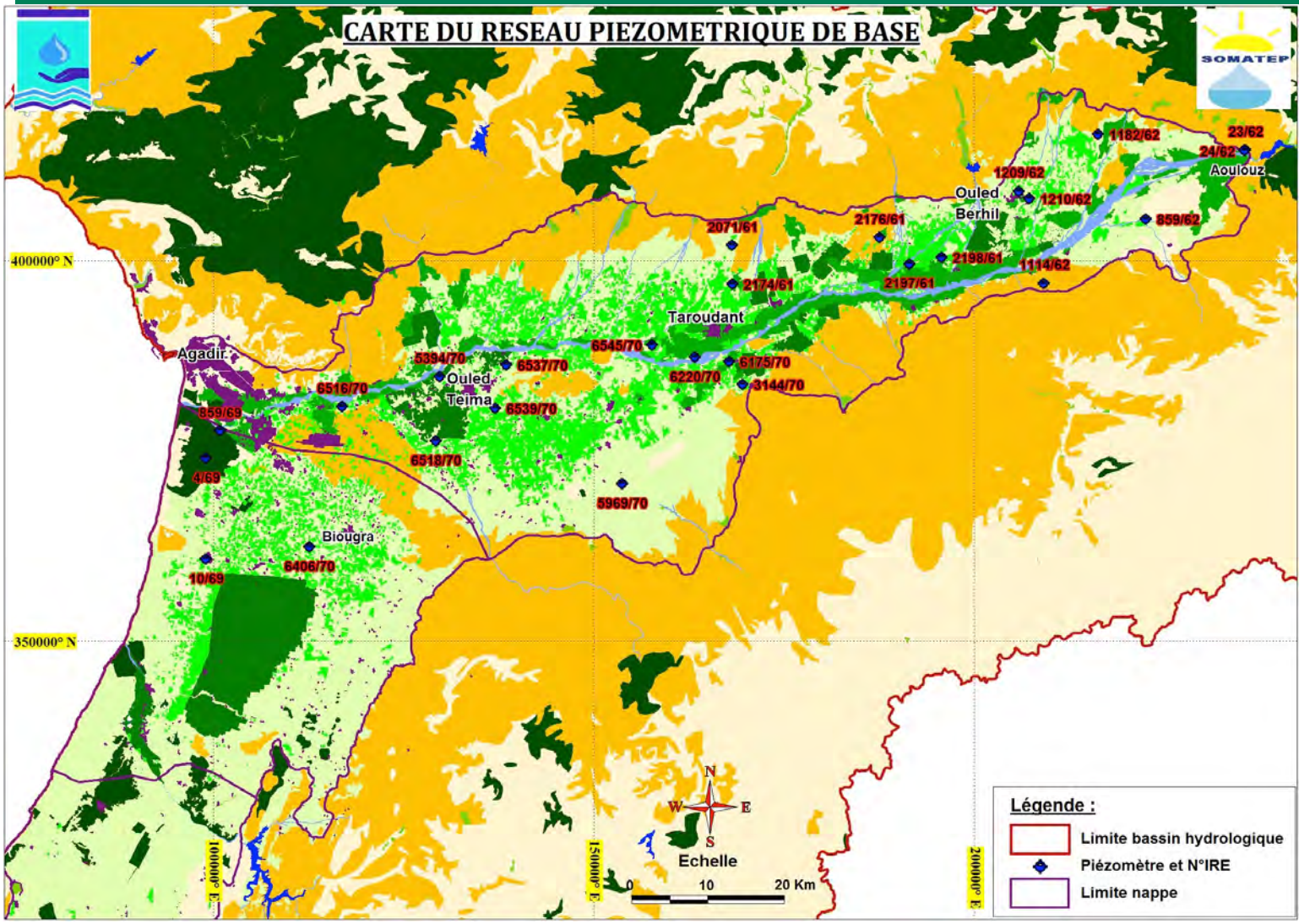
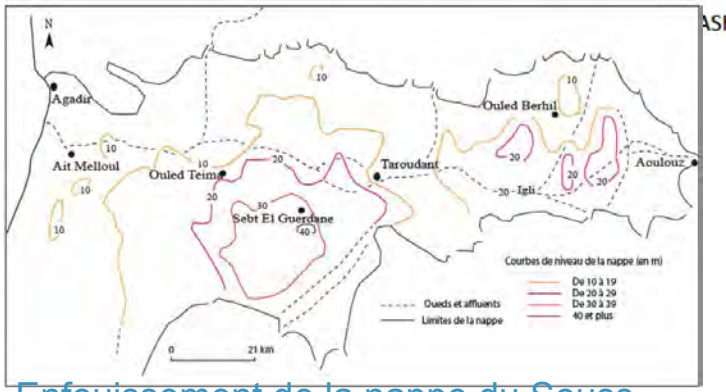
1. The context of Guerdane
A huge watertable with many users



Puits

1. The context of Guerdane
A permanent overexplotation of groundwater

Évolution en baisse de la nappe phréatique du Souss depuis 1969



ASKASSAY K., 2006

Enfouissement de la nappe du Souss entre 1968 et 1993. D'après Askassay et Najib, 2008

Bilan de la nappe calculé en 2003

Termes du bilan en Mm^3/an	2002-03
Entrées	
Variation des réserves (déstockage)	393.00
Recharge	251.44
Alimentation par les bordures	35.38
Total	679.82
Sorties	
Variation des réserves (stockage)	83.06
Prélèvements	575.53
Pertes en océan	20.75
Total	679.34
Bilan des réserves	-309.46

Source : ABHSMD

1. The context of Guerdane
A permanent overexplotation of groundwater

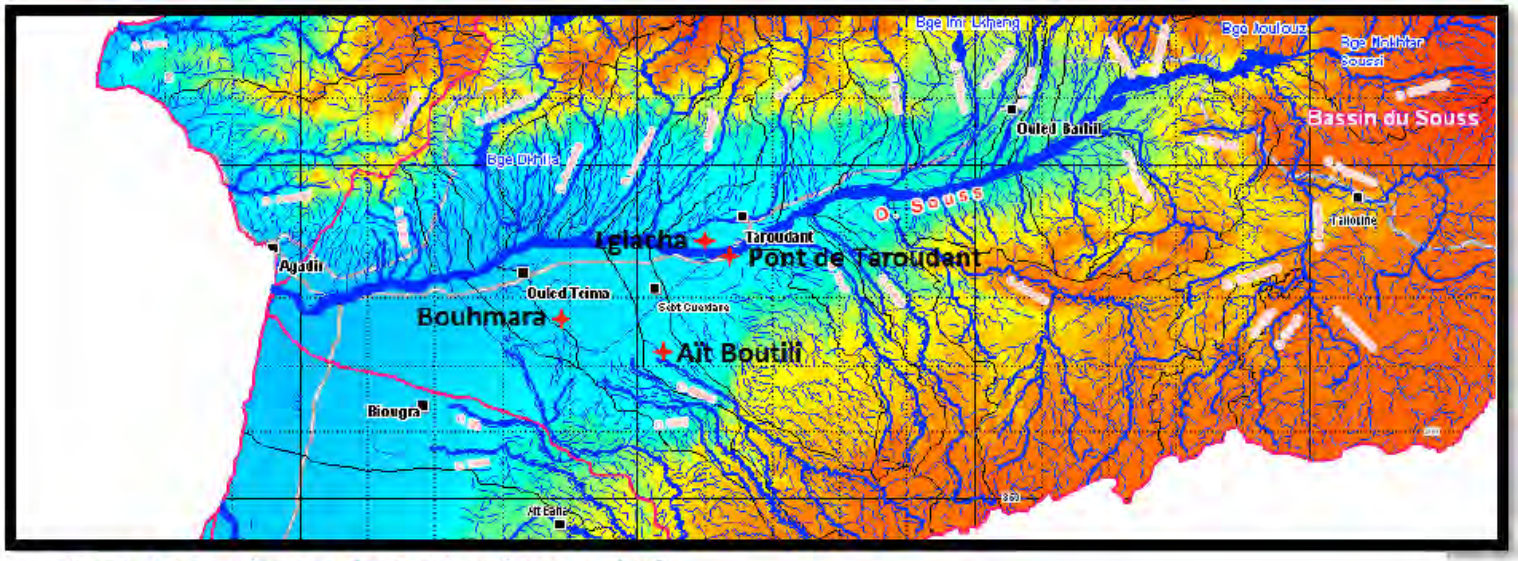


Figure 26 : Localisation des 4 piézomètres analysés

Source : ABHSMD

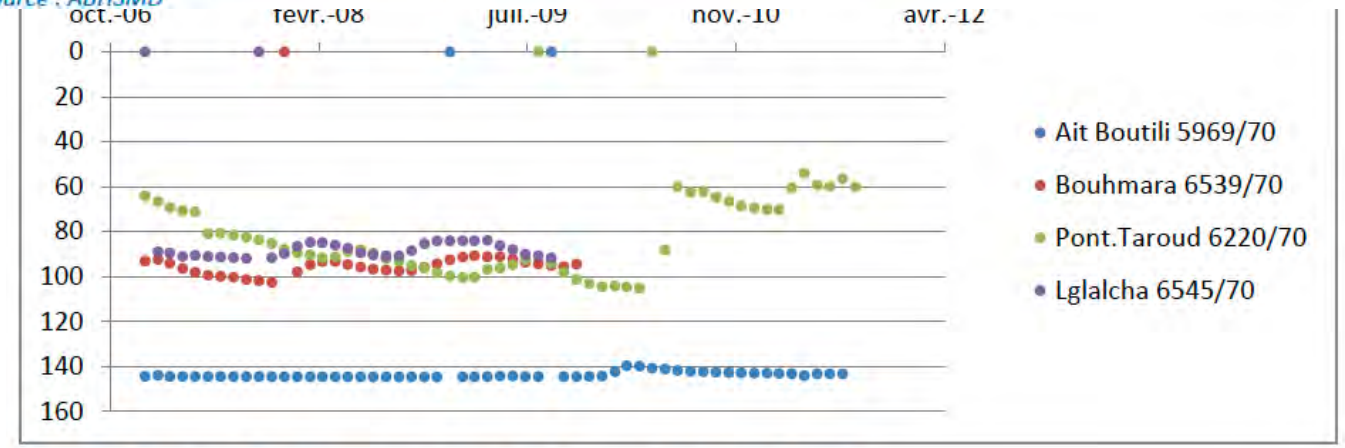


Figure 27 : Evolution du niveau piézométrique de la nappe entre 2006 et 2012

Source : traitement des données issues de l'ABHSMD

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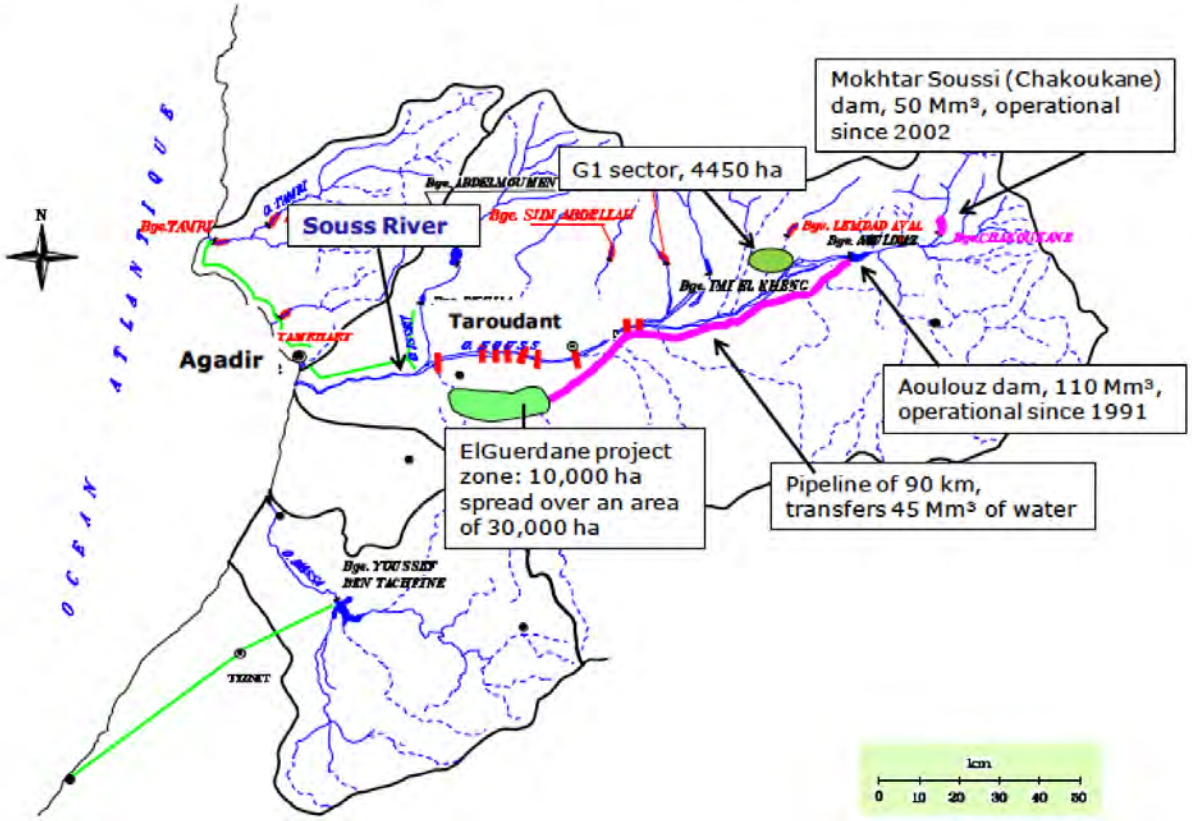
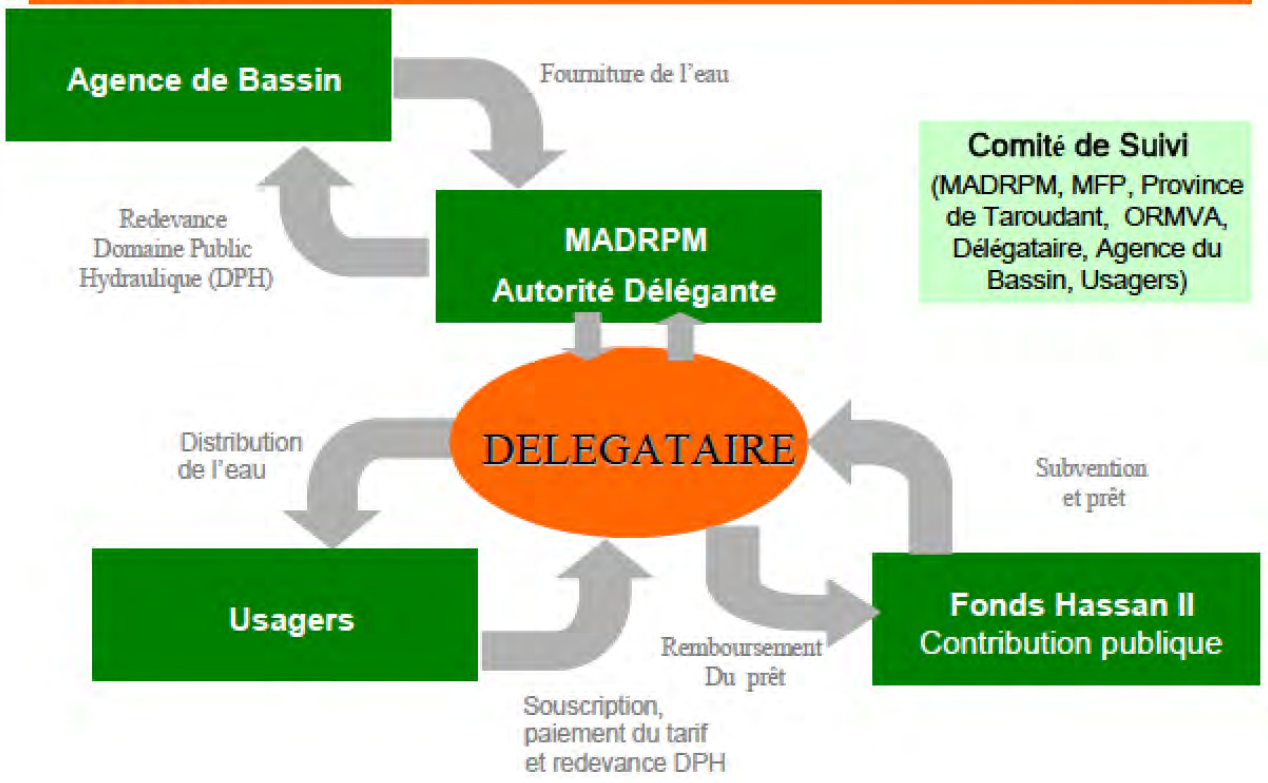
1. The context of Guerdane
A new policy : save the trees with a specific dam…

Figure 1. Schematic presentation of the El Guerdane project in its regional setting.



Source : Houdret, A. 2012. The water connection: Irrigation and politics in southern Morocco. Water Alternatives 5(2): 284-303

1. The context of Guerdane … and experiment a private-public agreement for water management in the new scheme



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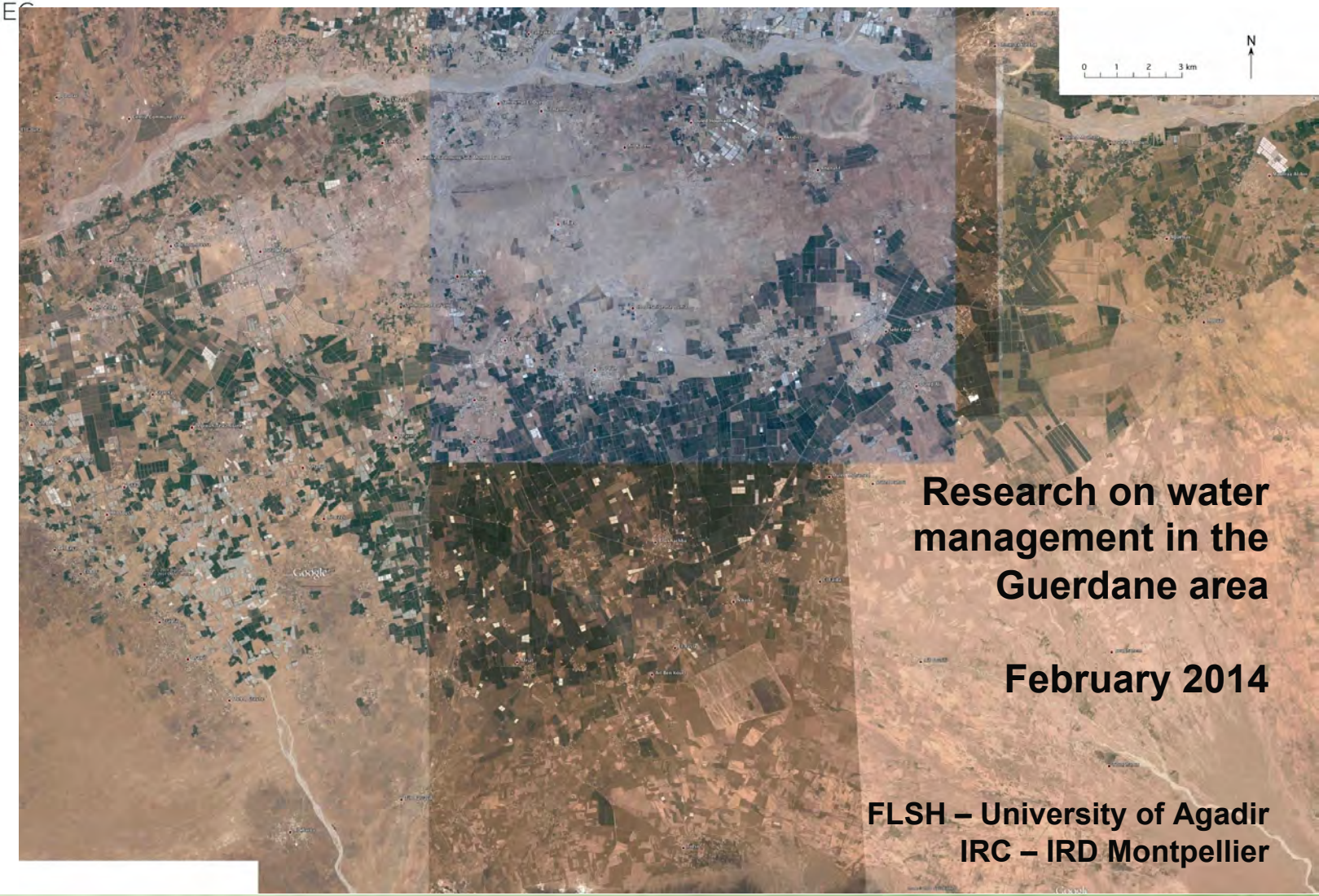
1. The context of Guerdane
Questions of research : what happen ?
Inside Guerdane project ? Around Guerdane Project ?



Research on water management in the Guerdane area

February 2014

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IRC – IRD Montpellier

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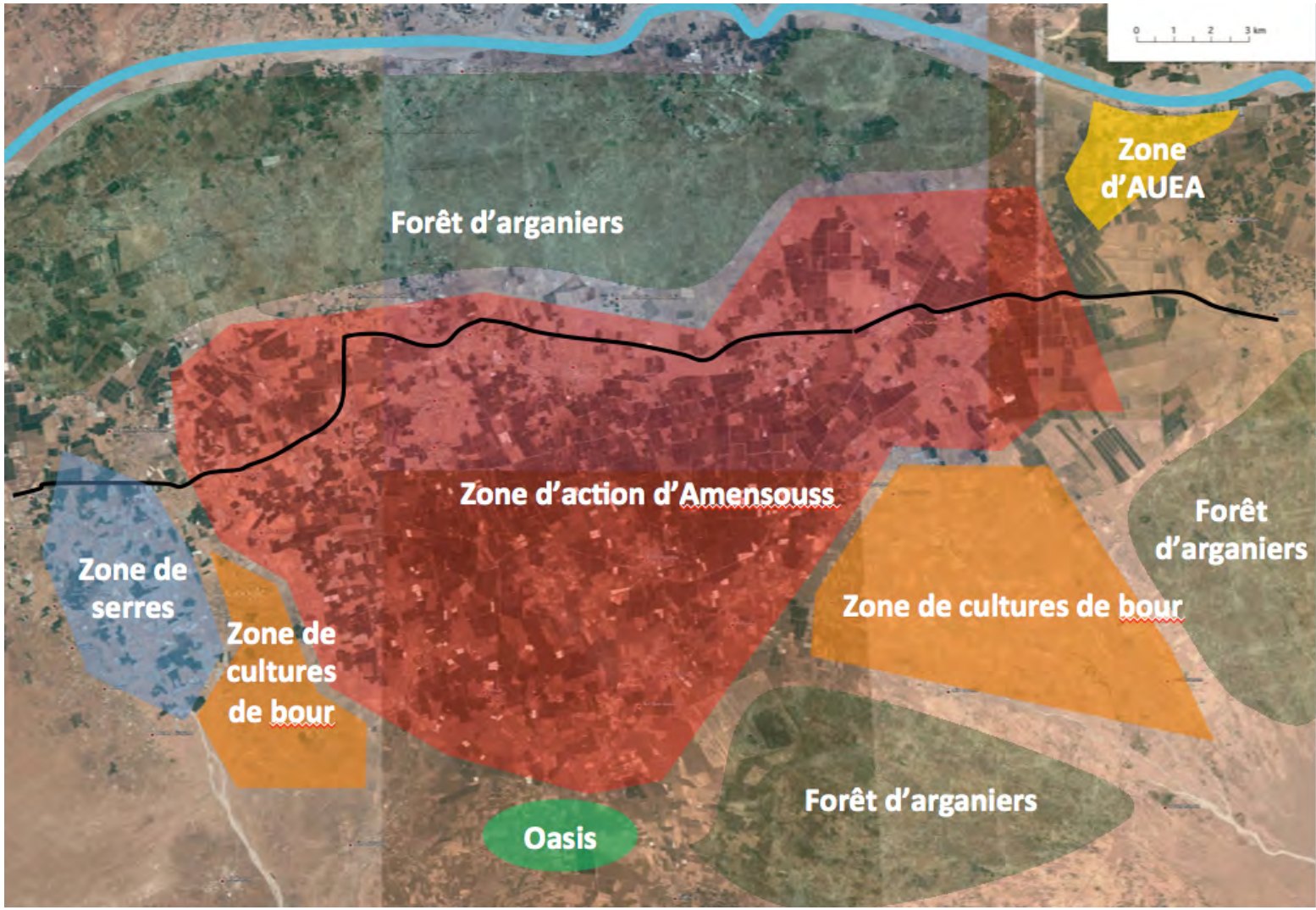
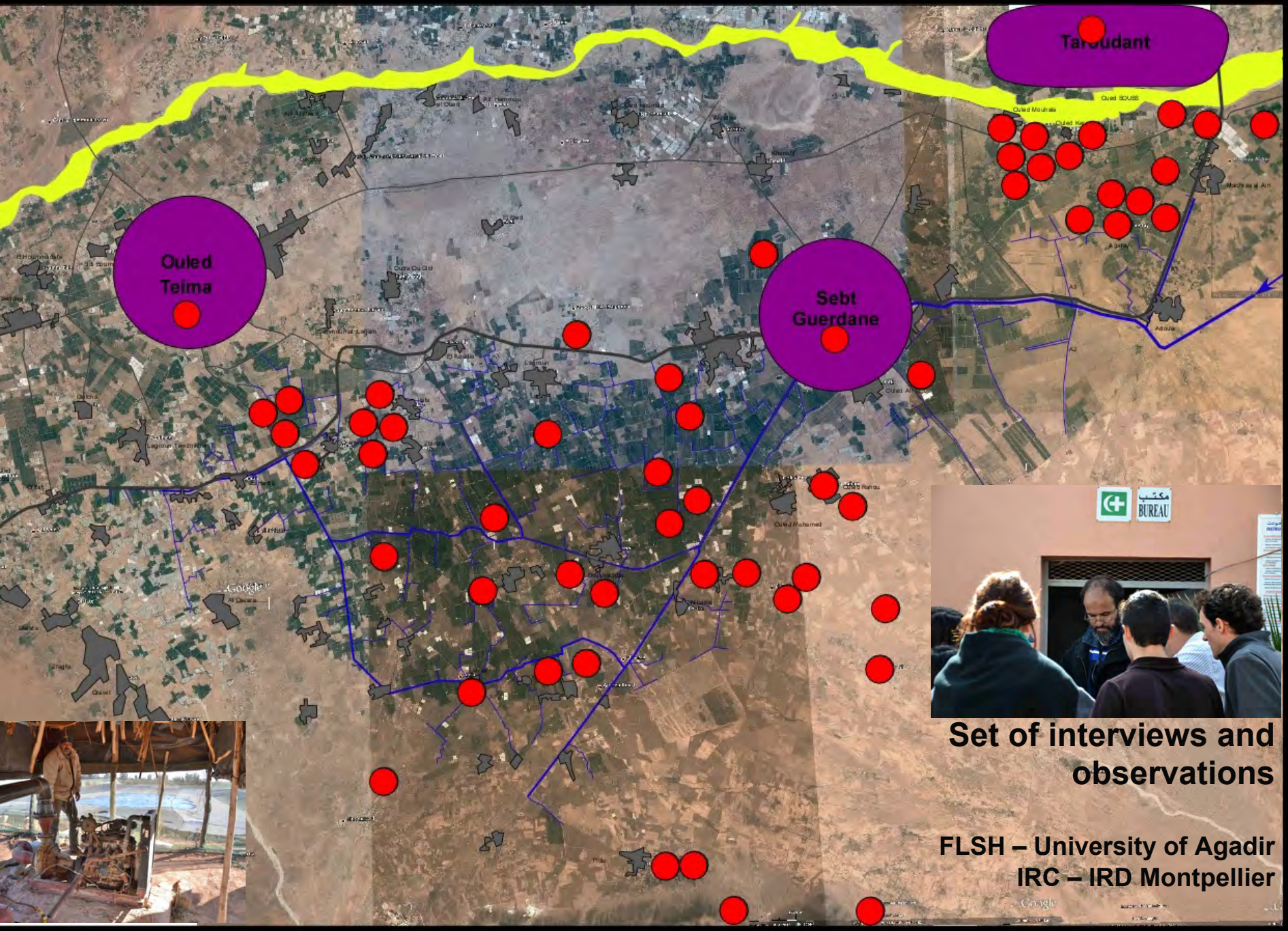
1. The context of Guerdane
Questions of research : what happen ?
Inside Guerdane project ? Around Guerdane Project ?





Set of interviews and observations

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IRC – IRD Montpellier

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2. History of successive schemes

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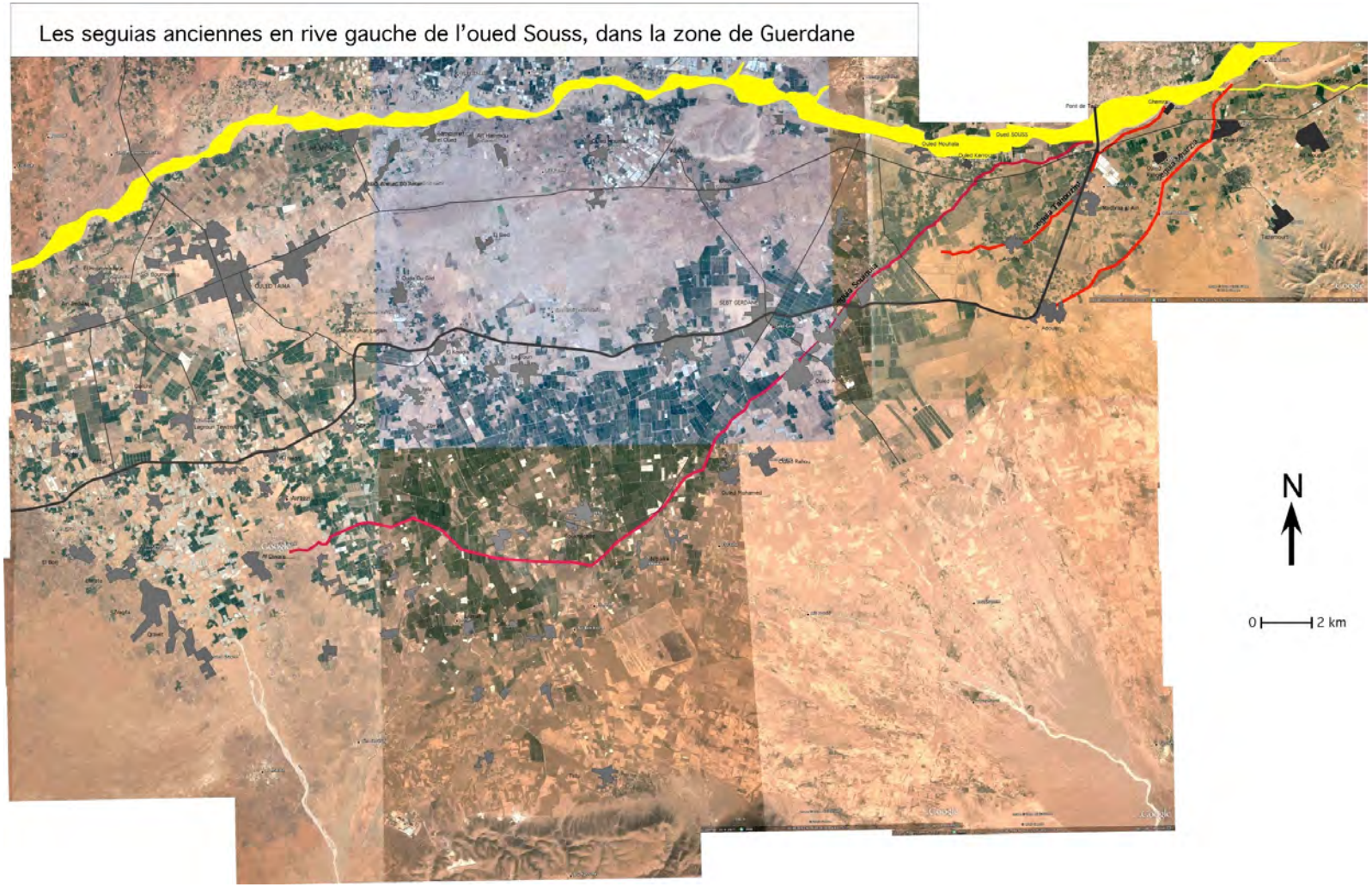
2. History of the schemes

A old set of canals depending of Souss river



archeology of modern hydraulic devices
The main seguia of Guerdane area

2. History of the schemes

Examples of old hydraulic paterns

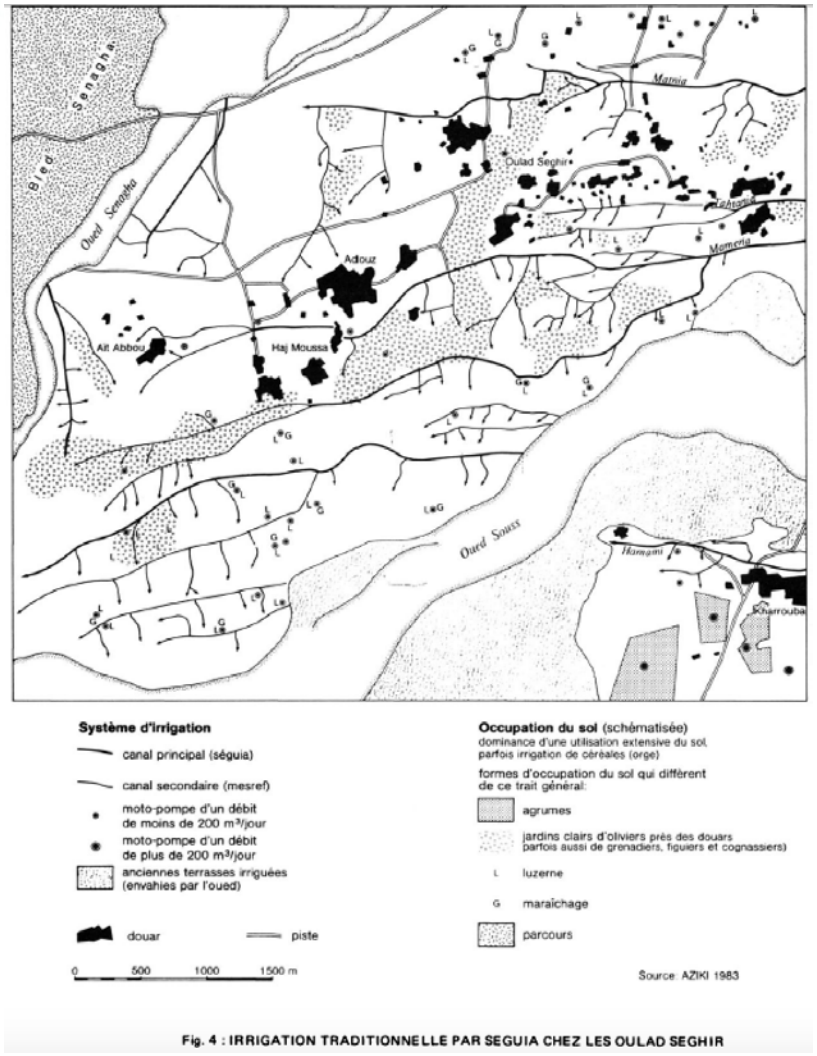
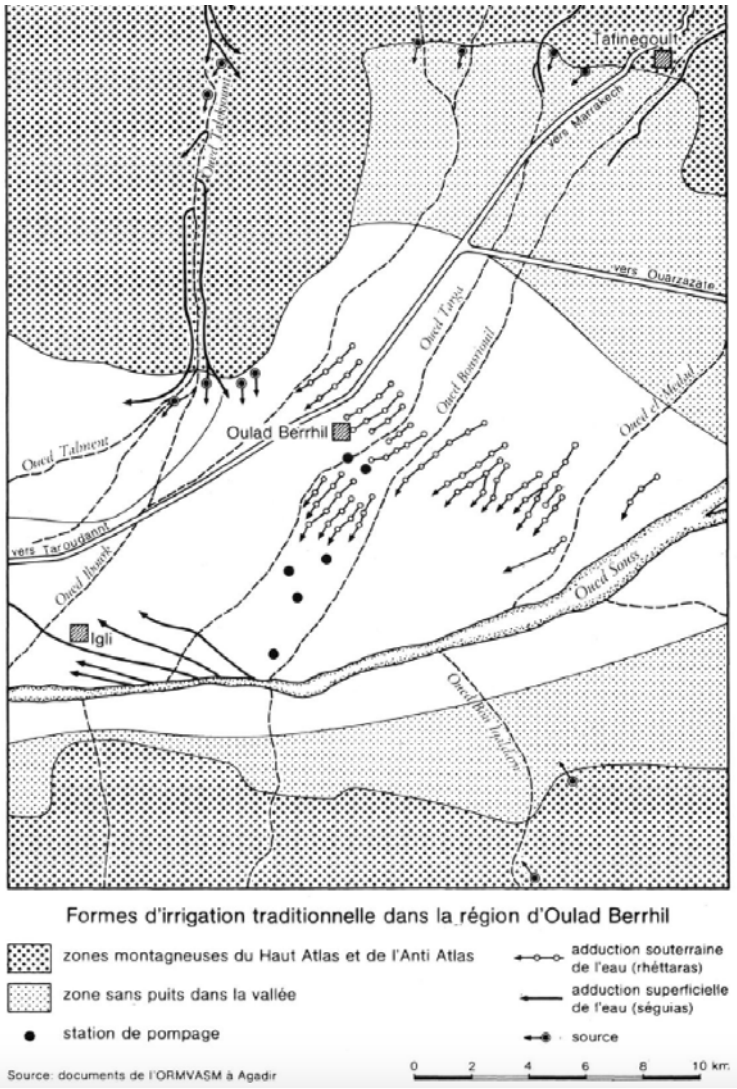


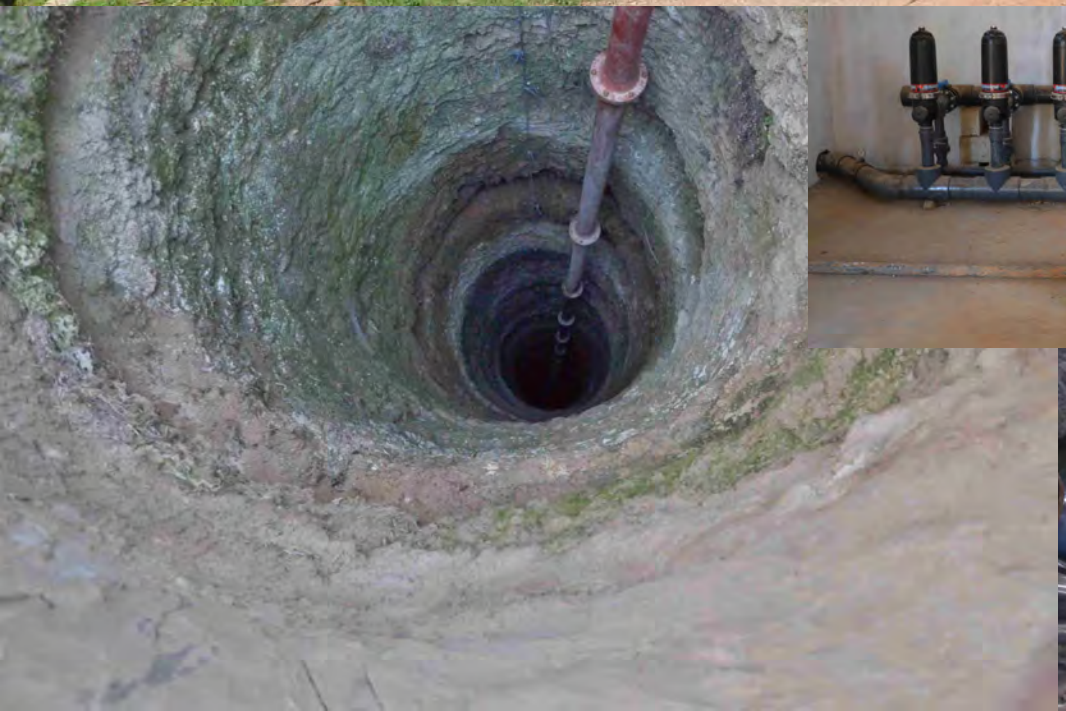
Fig. 4 : IRRIGATION TRADITIONNELLE PAR SEGUIA CHEZ LES OULAD SEGHIR



Source :
Popp, 1981

Tidsi, the last place with khettara and oasis organisation

The individual organisation of modern farms



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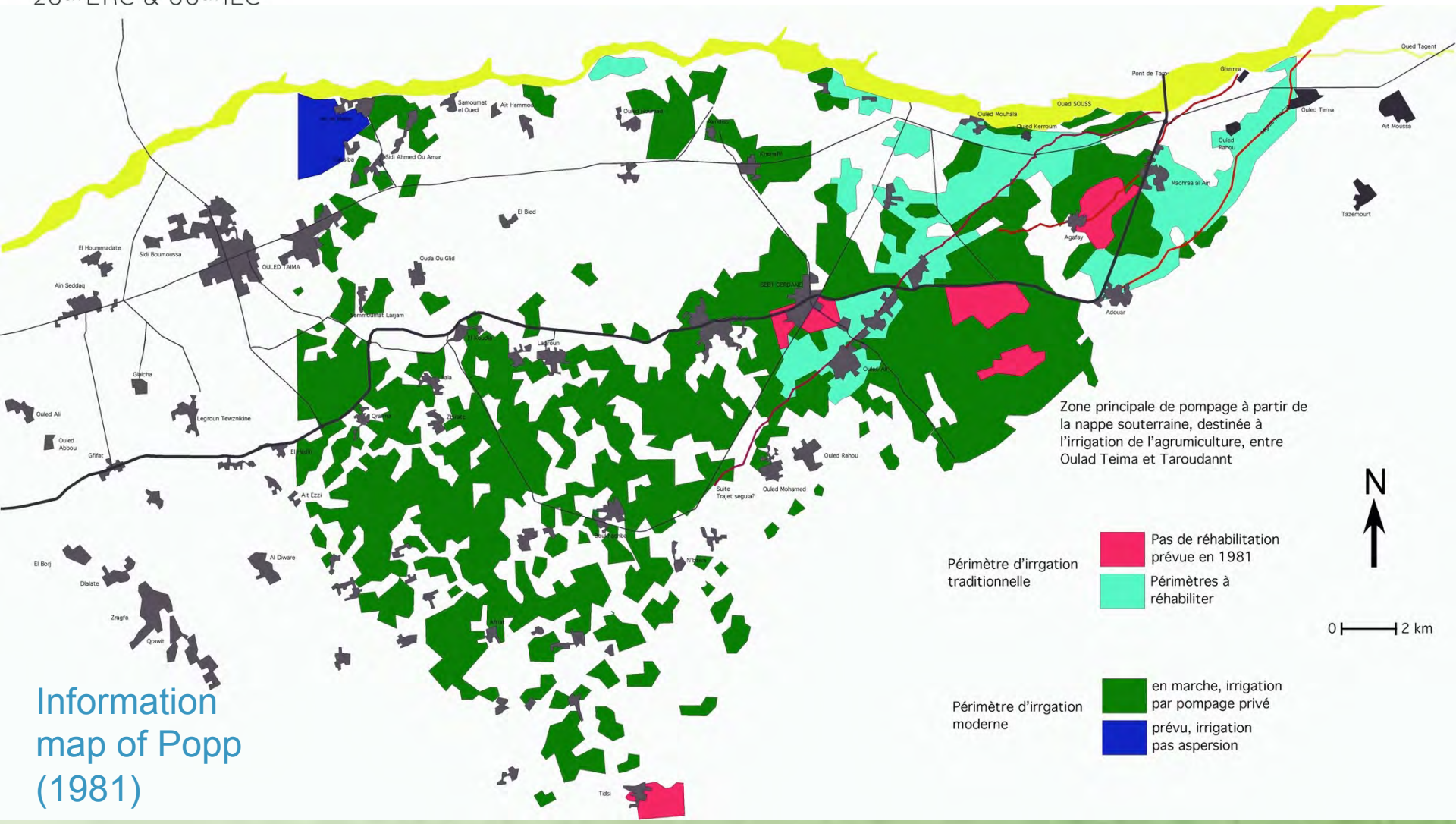
2. History of the schemes
Changing strategies : the race of pumping for individual entrepreneurs



Information map of Popp (1981)

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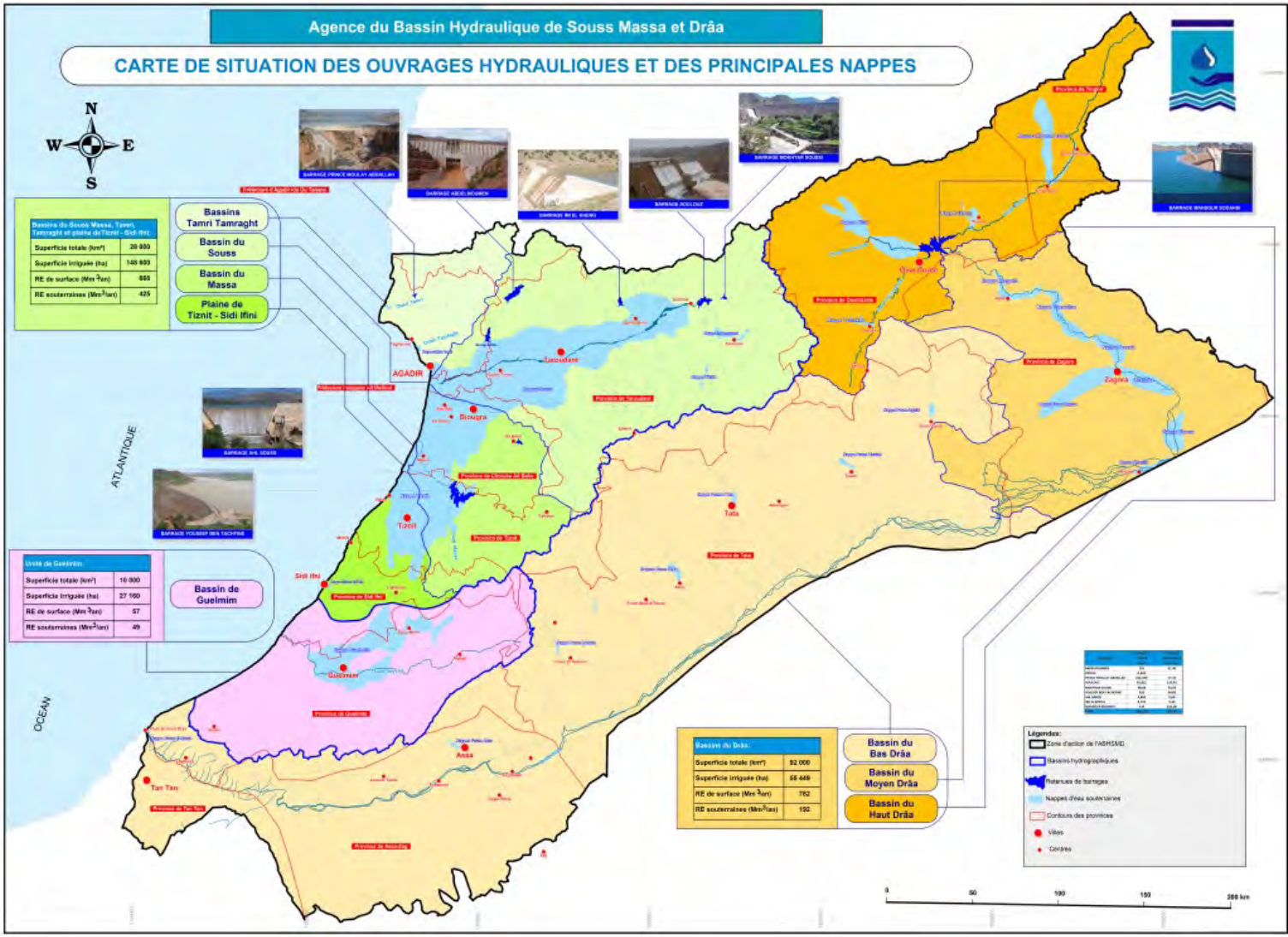
2. History of the schemes

Changing water distribution through a set of dams, canals and pipes



How it was in the 1990

Slou9ia

How it works nowadays

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2. History of the schemes

Surface irrigation in some places of the semi-old/modern scheme






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3. The new project of Guerdane to save large orange production units with a new offer of water

Réseaux anciens et réseaux modernes dans la zone de Guerdane

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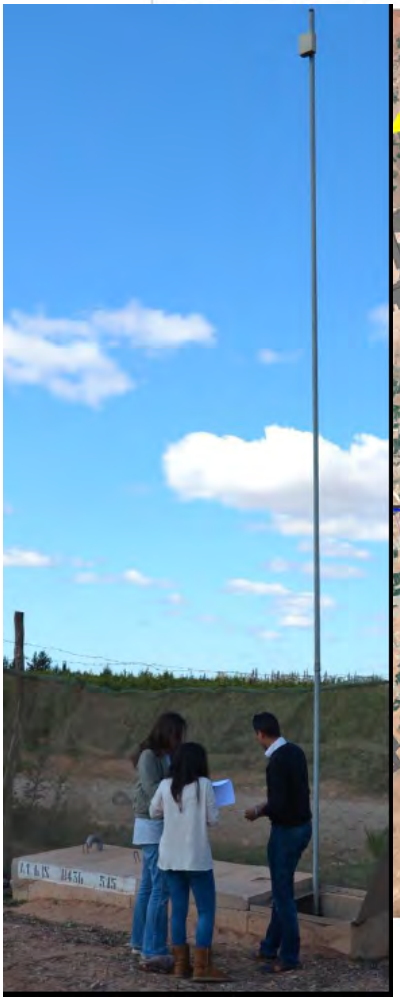
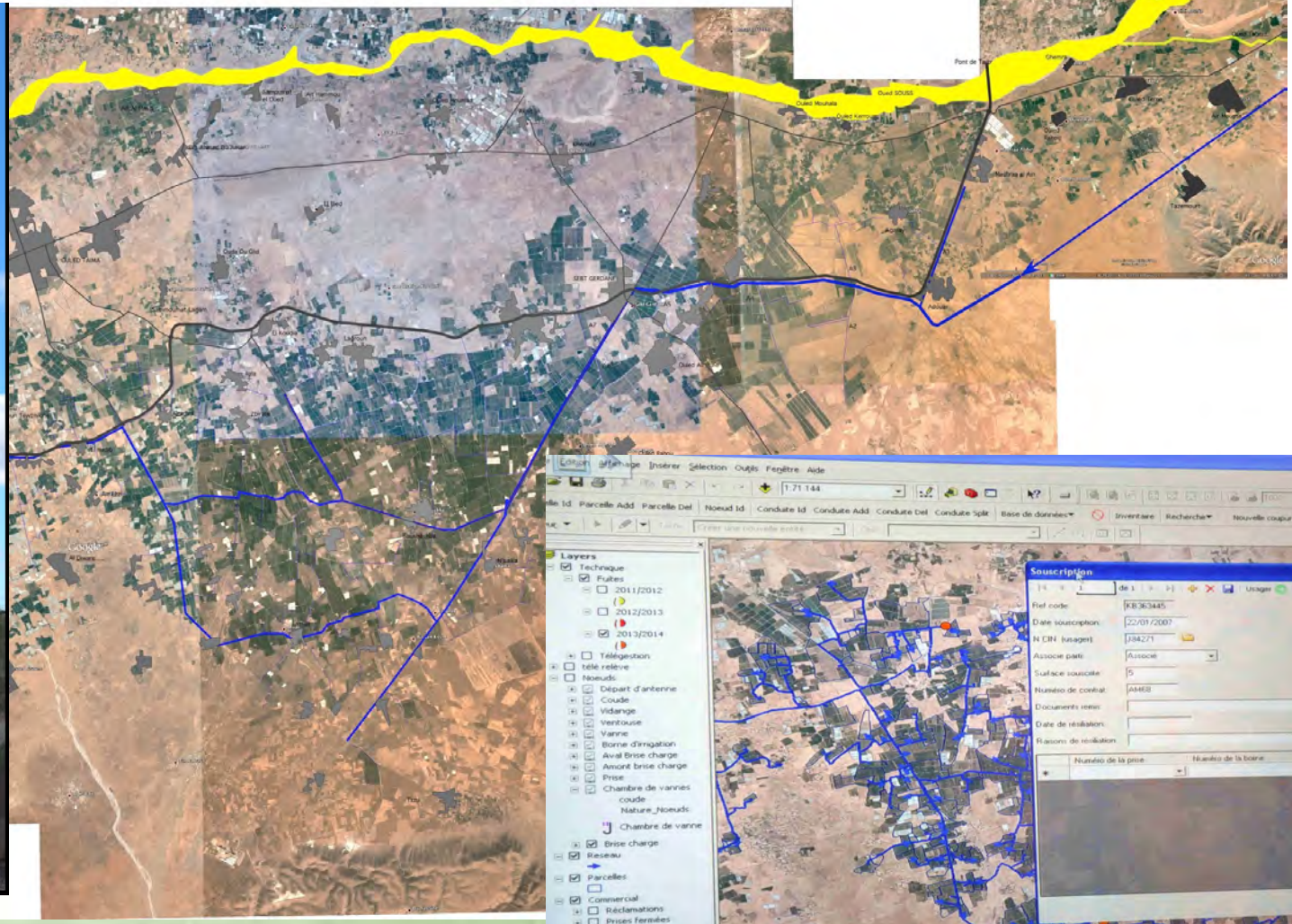
3. The new project of Guerdane

And its implementation

Le réseau de tuyaux sous pression d'Amensouss, dans la zone de Guerdane





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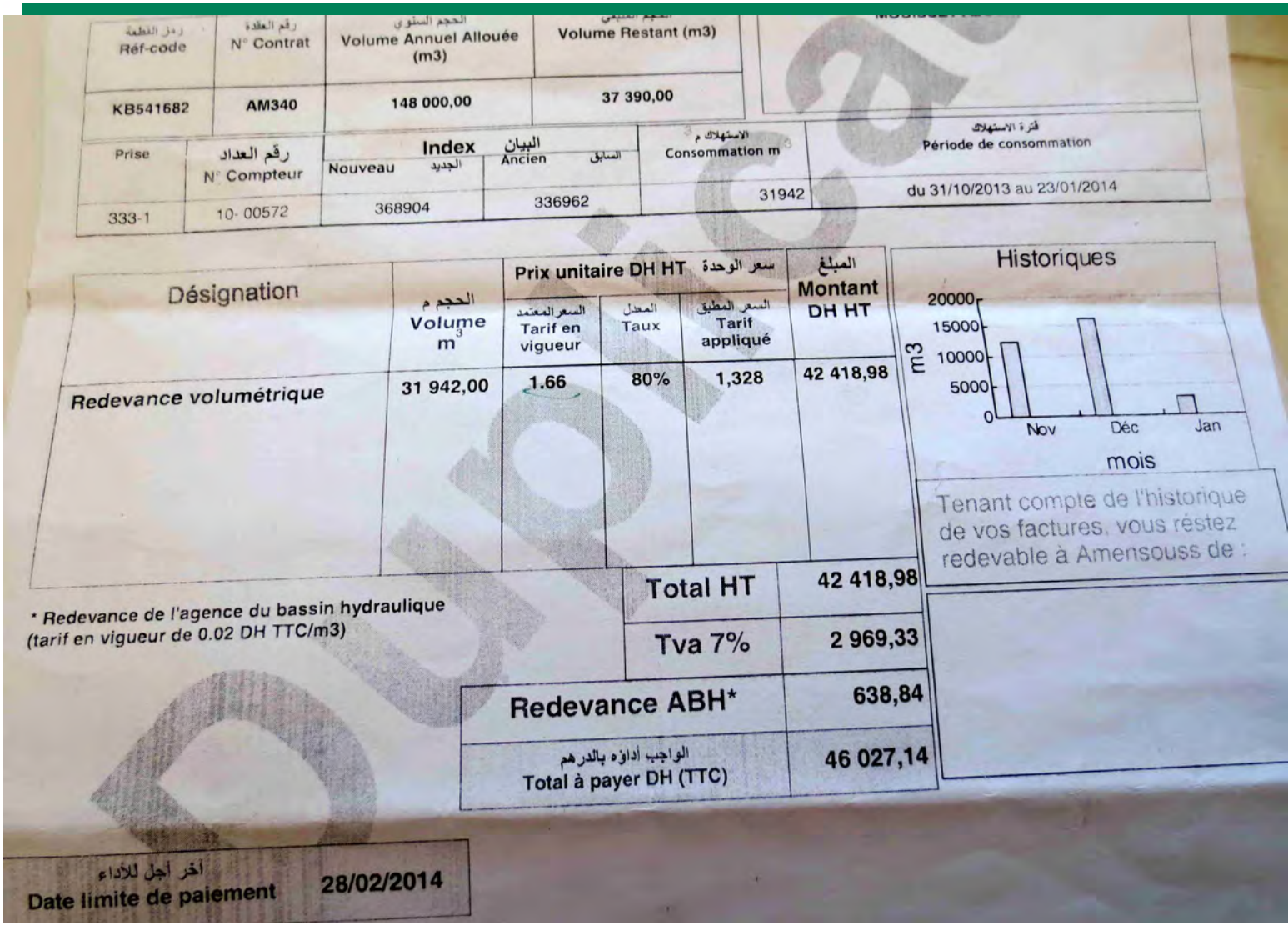
4. Effects of the new paradigmes



Réf-code	N° Contrat	Volume Annuel Allouée (m3)	Volume Restant (m3)
KB541682	AM340	148 000,00	37 390,00

Prise	N° Compteur	Index Nouveau	Index Ancien	Consommation m	Période de consommation
333-1	10- 00572	368904	336962	31942	du 31/10/2013 au 23/01/2014

Désignation	Volume m3	Prix unitaire DH HT – Tarif en vigueur	Taux	Tarif appliqué	Montant DH HT
Redevance volumétrique	31 942,00	1.66	80%	1,328	42 418,98

Historiques

Tenant compte de l'historique de vos factures, vous restez redevable à Amensouss de :

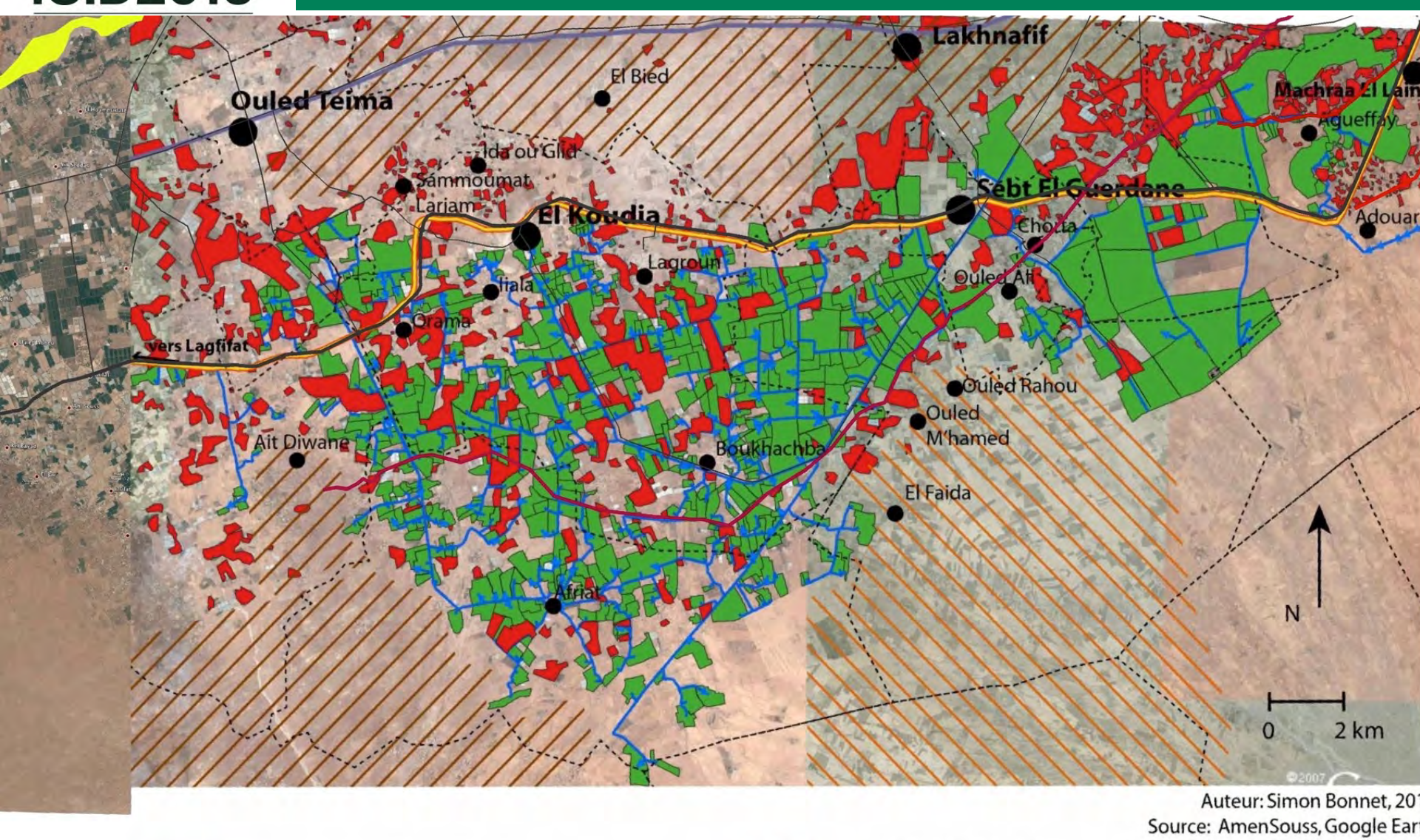
* Redevance de l'agence du bassin hydraulique (tarif en vigueur de 0.02 DH TTC/m3)

Total HT	42 418,98
Tva 7%	2 969,33
Redevance ABH*	638,84
Total à payer DH (TTC)	46 027,14

Date limite de paiement 28/02/2014

4. Effects of the new paradigmes

Discontinuity and new questions



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4. Effects of the new paradigmes

Orange trees for always ? Water for orange ?

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4. Effects of the new paradigmes

New models with others demands

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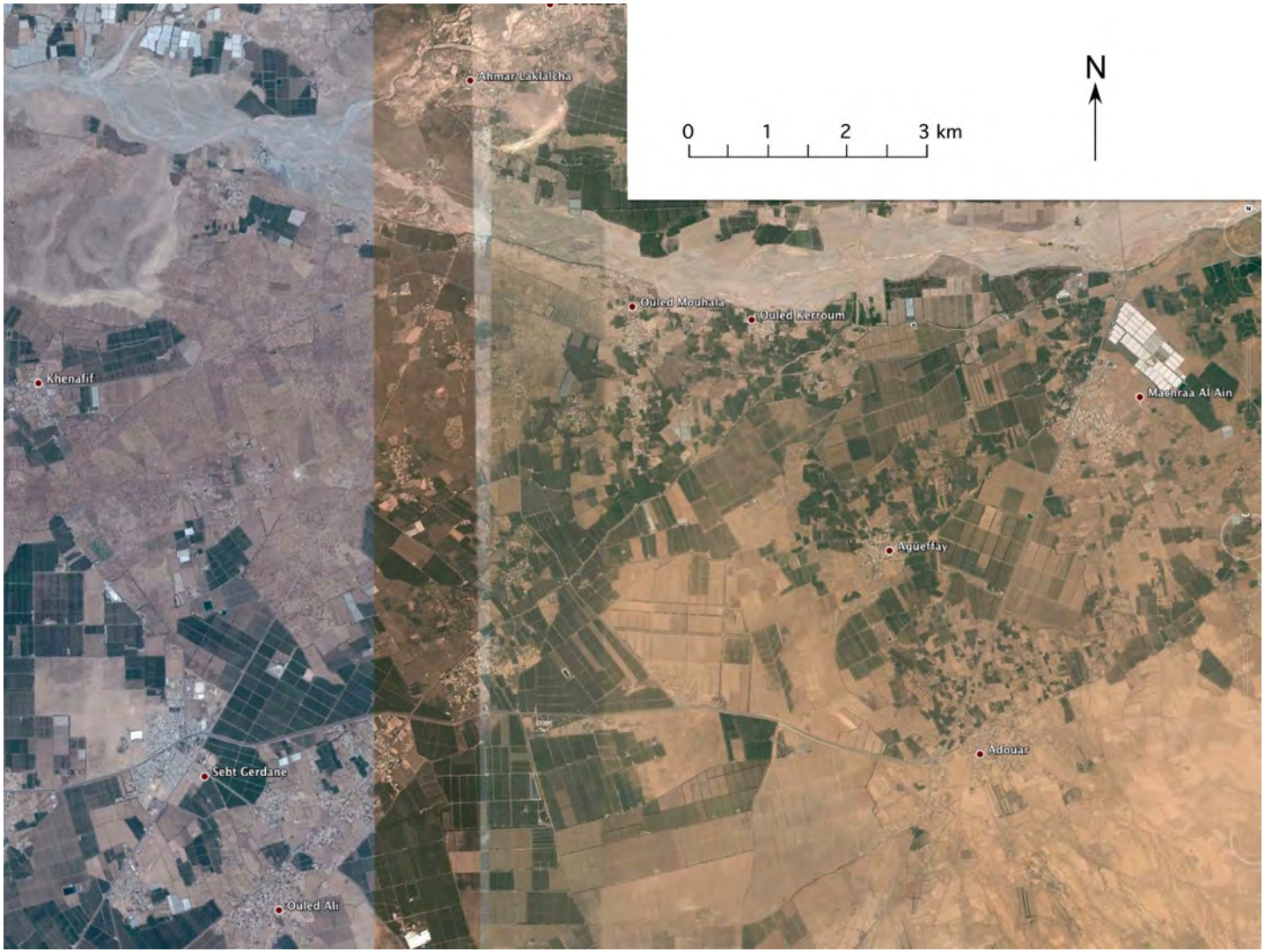
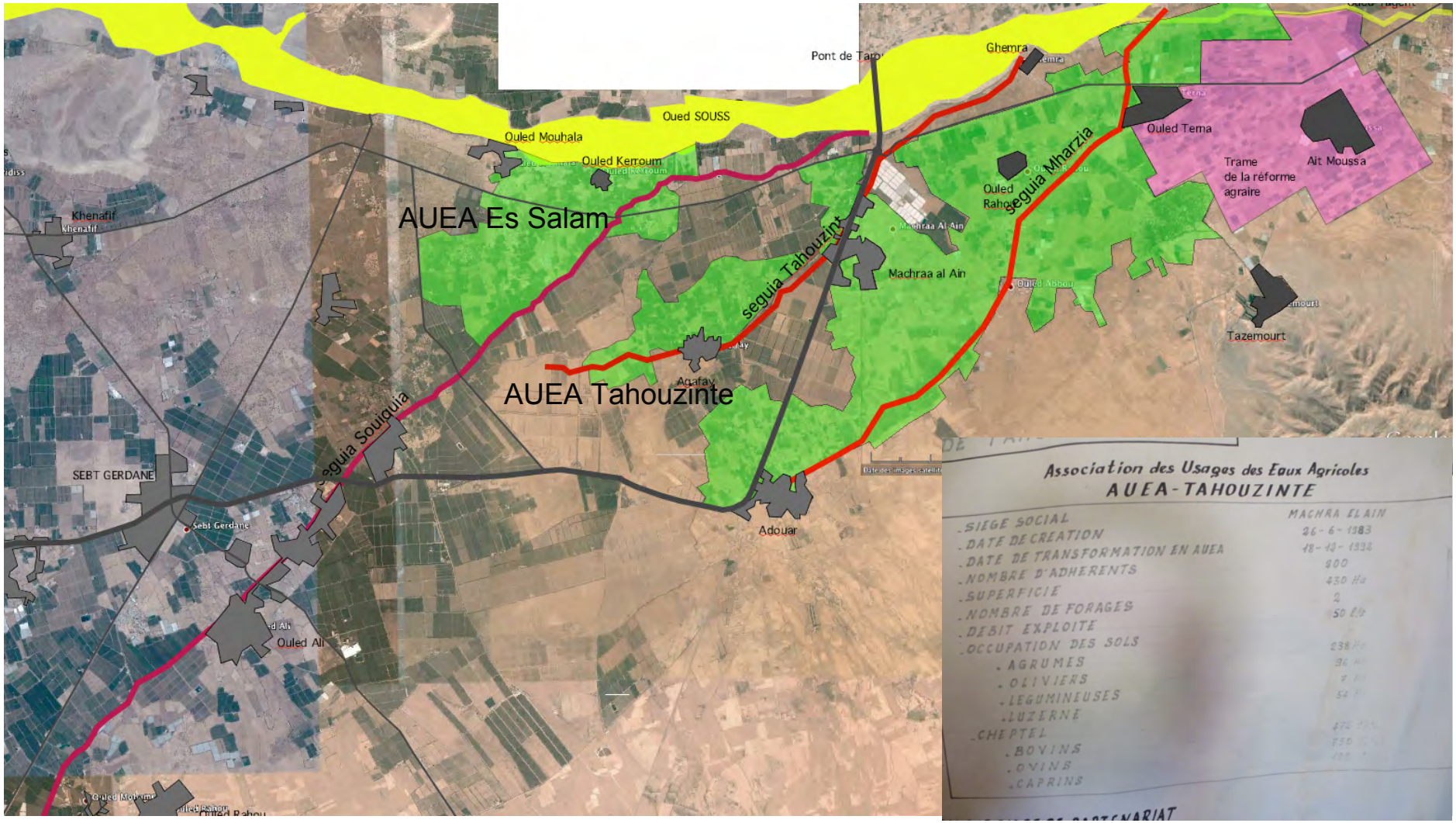
5. Colateral projects for small farmers



5. Colateral projects for small farmers



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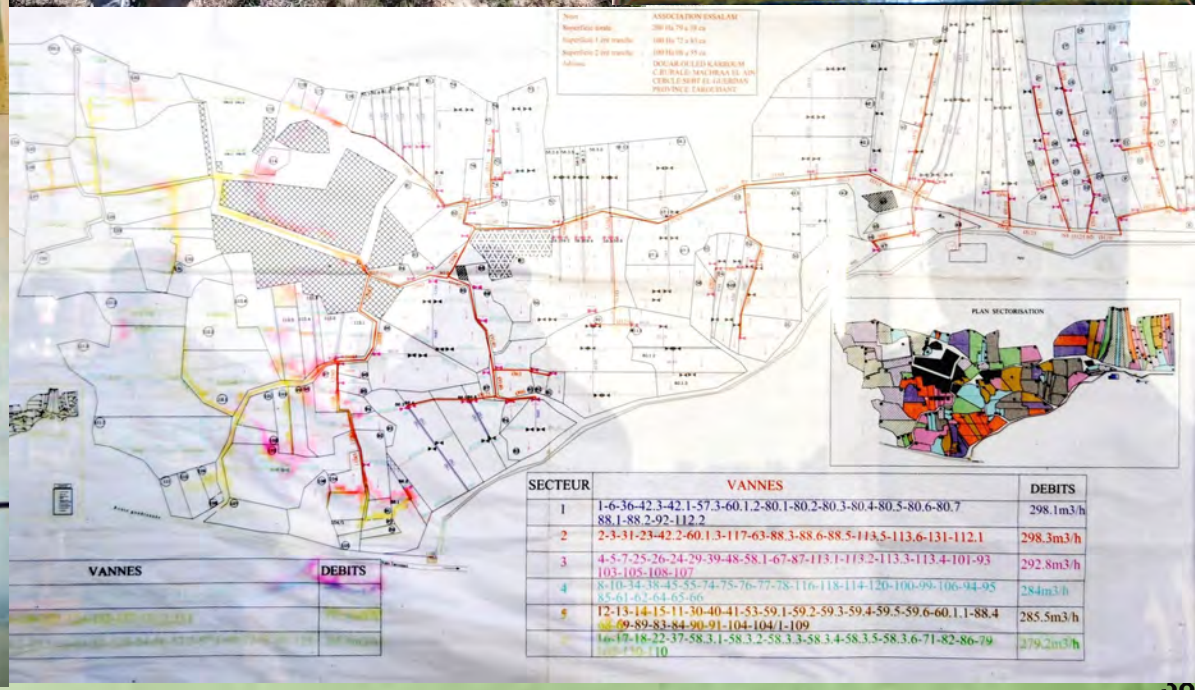
5. Colateral projects for small farmers



Goutte à goutte

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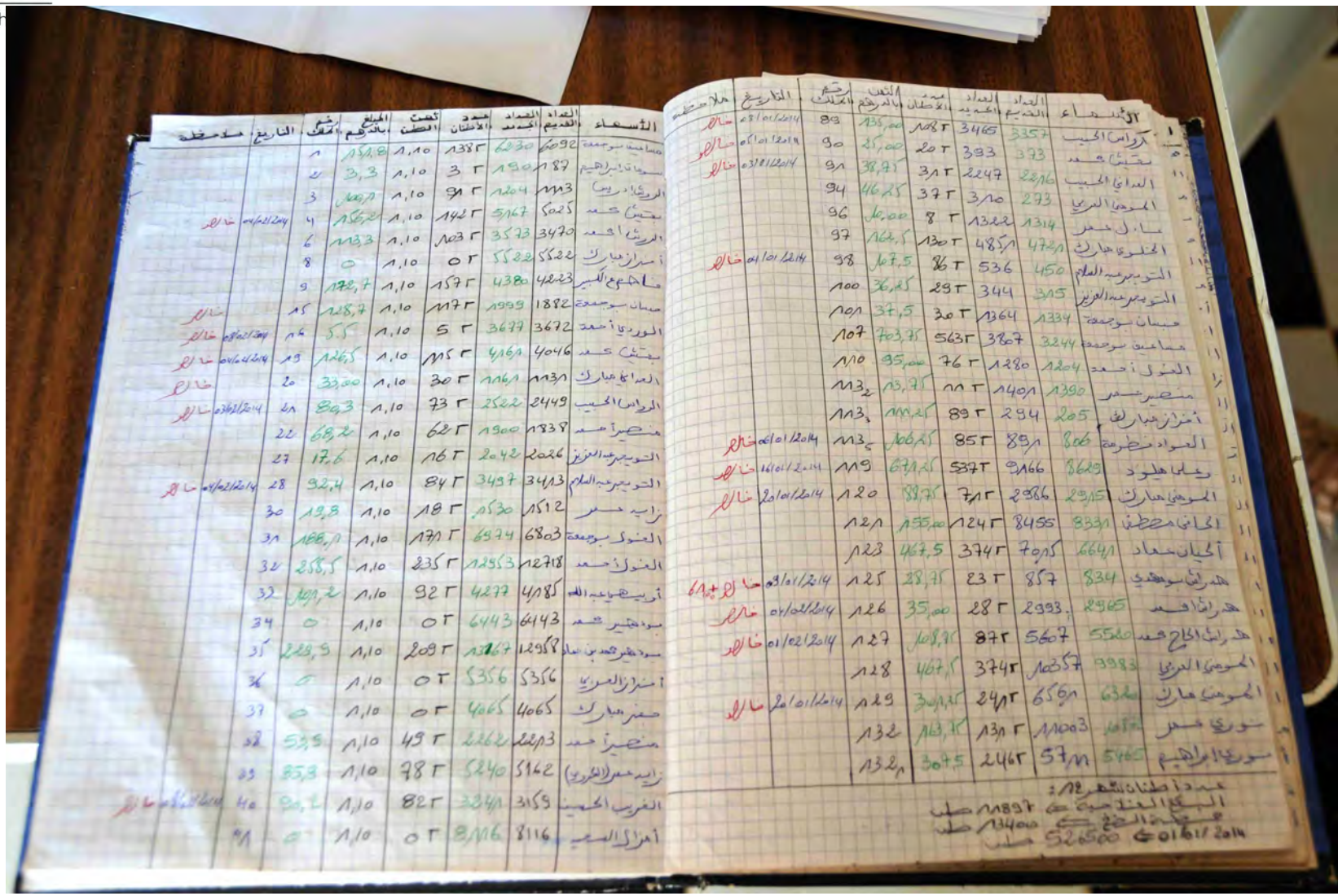
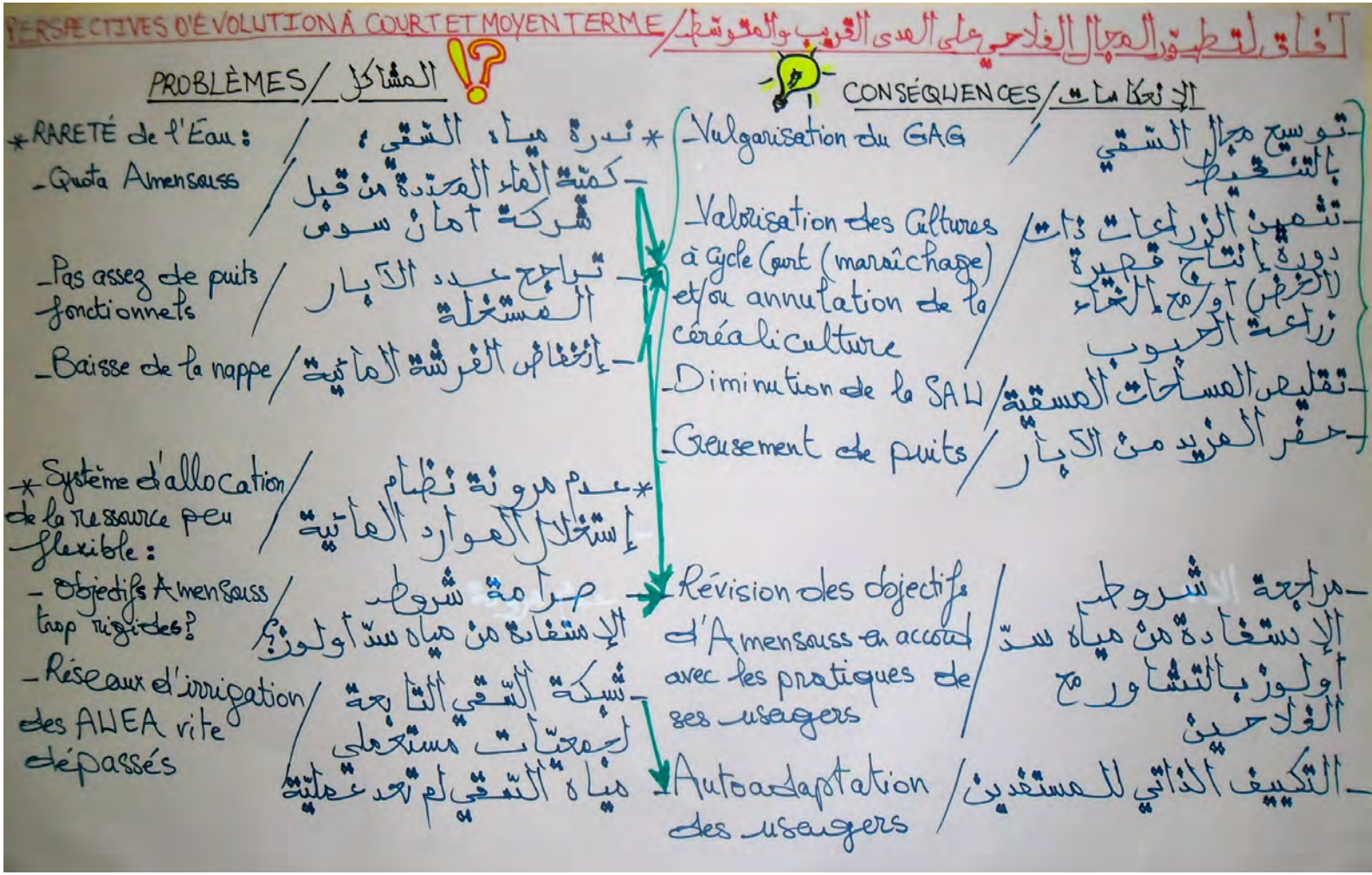
5. Colateral projects for small farmers



Conclusion
A complex future



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Some old thinks for new generations

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Some risks for many actors

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How to connect surface and ground water ?

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The story goes on. Some monthes later…

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Deeper and deeper races to get water