

**Chennai Project**  
**Thomas Seyler and Patrick Sakdapolrak**  
- November 2006 -

This document reviews the rationale for a closer and official collaboration between Thomas Seyler from the University of Paris X and ECDC, and Patrick Sakdapolrak from the University of Bonn. They have been exchanging ideas and sharing contacts on the field since 2005, have submitted research proposal and written an article for the newsletter of the *WHO Collaborating Centre for Health Promoting Water Management and Risk Communication*.

**1) Common research questions**

Both research questions deal with health risk in Chennai, indirectly or directly related to water (water-scarcity, floods, water quality, water management strategies). Thomas' project examines the epidemiology of vector-borne diseases (Dengue, Malaria, Chikungunya) in the metropolis, with a focus on the spatial distribution of infection and risk factors. Patrick's project studies the adaptation behaviour and negotiating processes among vulnerable populations facing water related health-risks, including vector-borne diseases.

The central hypothesis of the two projects is two-fold: 1) that exposures to water-related stressors, health status and adaptive behaviours are socially dependent and spatially specific 2) that policies at the local level can be reinforced by taking these specificities into account.

**2) Common study areas**

Nine sentinel areas have been selected as study areas for the health surveys on vector-borne diseases. These intra-urban spaces are located along a transect starting from the historical centre of the metropolis (George Town) and ending in the peri-urban interface, and include 3 slums, 3 government's colonies and 3 high-income residential areas. The three slums are also the study areas for the work on adaptive behaviour and negotiating process among most vulnerable populations. The three common study areas are described below

## **Kalyanapuram**

Location: Ward 48

Population: 2000

Field contact person at the Corporation of Chennai:

Mr. Thirunavukarasu K.



## **Kakkan Colony**

Location: Ward 73

Population: 1444

Field contact person at the Corporation of Chennai:

Mr. Seleakumar



## **New Colony**

Location: Zone V

Population: 500

Field contact person at the Corporation of Chennai:

Mr. Seleakumar



### **3) Complementary expertise: quantitative and qualitative research**

As already stated elsewhere, a multidisciplinary approach is used to tackle the social, physical and biological complexity of the metropolis of Chennai. Inputs from epidemiologists, entomologists and virologists from IFP, VCRC and IRD are proving fruitful. Moreover, it should be pointed that both quantitative *and* qualitative methodologies are involved, using the comparative advantages of both PhD students. Patrick's research project is guided by qualitative research methodology. He is familiar with the collection and analysis of qualitative data. He has already conducted interviews in New Colony. He presented the preliminary results at the First Summer Academy on Social Vulnerability and Disasters organised by UNU-EHS. Thomas is familiar with the collection and analysis of quantitative data. He is developing a spatial database using health data from the surveillance system of the corporation, entomological surveys, and remotely sensed data.

### **4) Calendar**

Patrick will conduct fieldwork in Chennai from November 2006 until April 2007 and from September until October 2007. The next field trip of Thomas is planned for the beginning of 2007. Its main objectives are:

- To carry out the questionnaires in the sentinel areas with Patrick - these questionnaires will be jointly designed and translated by January 2007 and reviewed by The Centre for Survey Research and Methodology (ZUMA) in Mannheim. The sampling frame has already been discussed elsewhere.
- To organise a meeting for the animation of the entomologists network at the Corporation in charge of the collection of *Aedes* with BG-traps.
- To organise at the laboratory of informatics and applied geomatics at IFP a training in course in GIS for 3 employees of the Corporation of Chennai.

In the meantime, activities underlined in the table below have been going on since 2005 and are still ongoing. They include systematic data collection on the physical environment, on health and entomological indicators provided by the Corporation of Chennai.

### **5) Common academic production**

[www.whocc-bonn.de](http://www.whocc-bonn.de)



Object		Data collected	Collection methods	Sciences involved	PhD Student
ENVIRONMENT	Climate	Rainfall, temperature, relative humidity, wind	Personal weather stations (Vantage Pro 2©) <a href="#">Data logger (Lascar©)</a>	Climatology	Thomas
	Physical environment	Detailed mapping of the sentinel areas: - Density of houses - Type of habitats - Land-use - Water ways, storm water drains, pumps, wells, overhead tanks - Water storage	<a href="#">Field work, GPS</a> <a href="#">High resolution satellite of the transect (sample of IKONOS from Sankar)</a> Questionnaires	Geography Remote Sensing	Thomas & Patrick
HUMAN POPULATIONS	Socio-economic and cultural	Demographic indicators, income group, mobility, degree of social segregation	Questionnaires	Sociology Geography	Thomas & Patrick
	Health	Morbidity/mortality associated with water-related diseases	- <a href="#">Passive case reporting (municipal surveillance system and private health centres)</a> - Questionnaires	Epidemiology	Thomas
		- Health care utilization - Perception and knowledge of the diseases	- Questionnaires - Perception and knowledge surveys	Health Geography Sociology	Patrick
	Adaptive capacity	- Coping mechanisms - Perception of water-related stressors	Questionnaires, Knowledge and Practice survey, focus groups	Health Geography Sociology	Patrick
VECTORS RESERVOIRS	<i>Aedes sp.</i> <i>Anopheles sp</i>	- Larvae and Pupae Identification and location of breeding sites within the sentinel areas - Larval indices (HI, CI, BI)	<a href="#">Indoor and outdoor Surveys</a>	Entomology	Thomas
		Adults Density, dispersion, contact with hosts	Mosquito Traps (BG-Sentinel©) and others		

## **Appendix :**

### **Adaptation behaviour and negotiation processes. How the vulnerable cope with water-related health risks in Chennai**

**person in charge:** Prof. Dr. Bohle

**research assistant:** Patrick Sakdapolrak (Dipl.Geogr. /M.A.)

**project period:** October 2006 - September 2008

The proposition that human health in any social system is a reflection of the specific state of its social and ecological environment (ESSP 2005) is the basis for this project. The research focuses on threats to human health posed by water-related stressors in metropolitan Chennai, South India. Chennai is well-suited as an investigation area from a water as well as a health perspective.

The region is characterized by a monsoonal climate with pronounced seasonality - intensive dry periods alternate with periods of excessive rainfall and occurrence of tropical cyclones. The city is particularly affected by water scarcity in the pre-monsoon period. Furthermore devastating tropical cyclones and excessive rainfall lead time and again to widespread flooding in Chennai, particularly in low-lying areas, where the urban poor are forced to live. Multiple health risks arise from the multifaceted water crisis. In particular water-borne diseases (diarrhoea, cholera) and diseases related to water availability (dengue fever, malaria) are of special concern. The extreme poverty and marginalization of a large part of the population of Chennai - more than one third of the five million citizens in the metropolitan area live in slums - predispose to high exposure and sensitivity towards health risks and to a concurrent limited coping and adaptation capacity.

The research project which is conducted in cooperation with the department of Geography, University of Madras (Prof. Vasantha Kumaran) focuses the adaptation behaviour of vulnerable urban populations in relation to water-related health risks. The project has two major objectives. Firstly, the coping and adaptation behaviour of the various actors will be analysed from an action-oriented perspective and linked to the structural framework of the megacity. The focus will be on the concrete livelihood strategies and the negotiation processes aiming at securing human health. Secondly, the sustainable livelihoods framework as an analytical tool for investigating health risks in megacities shall be streamlined. To this end, the two complexes of the framework that are central for adaptation behaviour, namely "livelihood assets" and "livelihoods strategies" will be linked and operationalised towards an action-oriented perspective. The project also seeks to provide baselines for development policies in the context of health risks in megacities, particularly in the field of strengthening the coping and adaptation capacities of the vulnerable

<http://www.giub.uni-bonn.de/bohle/english/welcome.htm>.