Villes en développement

Bulletin de la coopération française pour le développement urbain, l'habitat et l'aménagement spatial

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Robert d'Ercole

One of Quito's main hospitals: mayor vulnerability due to traffic.

Sustainable cities

The issue for the 21st century?

n 2007, for the first time in the history of humanity, more than half the world's population will be living in cities. The exceptional urban growth of the last fifty years presents a genuine challenge to all governments. This "urban explosion" is particularly difficult to tackle as it primarily affects the cities of the developing world which are consequently facing considerable problems in the areas of housing, jobs, transport, resources, waste disposal, pollution and, more generally, deteriorating living and environmental conditions... while at the same time the new urban residents arriving from the countryside see the city as providing opportunities for a higher standard of living.

The reality behind this illusion is that of all-pervasive hazards, be they technological, economic, societal, sanitary or natural. The complexities and problems of contemporary societies are

concentrated in cities, where uncertainty reigns and is likely to generate large-scale events with occasionally catastrophic results. Even just with regard to technological hazards, cities have already paid a high price. The tragedies in Mexico City and Bhopal, to name but a few, provide sad examples.

Experts forecast that the world's urban population will rise from three billion now to five billion in less than thirty years. Will there be a proportionate rise in the number of accidents and major crises?

The answer to this question depends solely on our efforts and perseverance in working together to create the conditions for genuinely sustainable urban development.

Nicole AMELINE President of the European Risk Institute, Minister for Professional Parity and Equality, Regional Councillor for Basse-Normandie

Urban spaces _____as sources of major technological hazards: towards territorial management and outlook

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Cities attract human activities and are directly affected by a potential increase in major hazards. This article sets out some original initiatives for sustainable management.

he growing number of crises that have occurred in recent years – pandemics, natural disasters and major accidents which have demonstrated the inadequacy of existing systems - have markedly altered the population's expectations of public policy-makers and experts. Citizens wish to see more transparency and are making increasing demands as new risk management techniques are developed. A conflict is emerging between the popular desire for absolute safety and the scientific observation that there is no such thing as "zero risk". In the West, the widespread crisis of confidence among the public concerning decision-makers merely exacerbates this situation.

Atthesametime, the boundary between natural and man-made hazards (which are generally described as technological hazards) is gradually being eroded: man's true impact on the environment (the link between climate change and greenhouse gas emissions, and between flooding and land-use, for example) is becoming a central topic of concern. The traditional

approach which provides an increasing number of partial safety solutions for different sectors and fields (industry, nuclear issues, the sea, land transport, etc.) still seems unable to improve the overall safety of systems, in particular because of the numerous dynamic interrelationships between their components. Put another way, risk is becoming more complex because human activities are becoming more numerous and more diverse and interact with each to an increasing degree within a given area.

Cities attract these activities and are directly affected by a potential increase in major hazards and by a change in their location.

For example, one can wonder if the risk reduction measures that are implemented at source by industry - with regard to fixed installations - really lead to risk reductions at the level of an urban area. For example, reducing inhouse storage often leads to a change in the mode of production. Increasing use of just-in-time techniques in the case of hazardous substances can lead to a dilution of risk on transport networks (roads, railways and waterways) and an accumulation at certain points (car parks, marshalling yards, port areas, etc.) which are poorly covered by regulations and where there is absolutely no operational visibility. What occurs therefore is risk transfer, according to the "communicating vessels" principle, from "SEVESO" legislation to "Transport" legislation. The first of these generates, in most European countries, zoning for land-use planning control while the second. which is particularly difficult to monitor, does not.

The reduction of risk at source by the operator, which is the central element of industrial risk management policy, also requires an integrated and territorial outlook whose complexity is obvious in view of the large number of players involved (Central Government, Local and Regional Authorities, Industry, etc.).

With regard to this type of issue and for all major hazards that are associated with human activities, we can, fortunately, observe that original initiatives are taking shape in some ur-

ban areas, – for example the Seine Estuary between Paris and the English Channel – in order to avoid segmentation which can itself generate new risks:

• First, it is possible to bring together all the actors involved in urban development and risk management in one place - or even better within a single structure - in order to put the difficulties encountered by each into perspective and find operational solutions. In the Haute Normandie and Basse Normandie regions, the European Risk Institute and the ORMES (Office des Risques Majeurs de l'Estuaire de la Seine) both display, at their respective levels but within the same associational framework. and with the same concern to support local managers, this strong desire for consultation, interchange and crossdisciplinary thought. The first of these structures is targeted towards gathering feedback and conducting research in the human sciences in the framework of territorial management while the remit of the second is to improve preventive information and provide crisis warning, protection and information in the event of a major accident.

- Next, within a certain area, it is possible to decision-makdevelop ing aid tools which can, before the event, process all the data relating to major risks or, after the event, suggest an immediate and proportionate response to an accident or crisis, as a result of automatic monitoring systems. Among the first group, GIS (Geographic Information Systems) are currently the most prevalent decision-making aid tools for local and regional authorities and central government, even though their full potential is not yet fully exploited.
- Last, it is essential to take major risks into account

in land use planning activities in order to be able to combine and organize. through a comprehensive process of study and debate, the issues that relate to spacial planning, economic development, the protection of ecological environments, and the safety of persons and goods. In this regard, while, of course, continuing to give priority to the reduction of risk at source, a major task remains: reducing the vulnerability of potential targets in the event of an accident. This is necessary in order to "adapt" the urban area (its networks, its institutions that are open to the public, its decision-making centres

etc. and, more generally, its urban planning and operation) to the dangers of an environment with certain characteristics as regards industry, energy and logistics.

Over and above their intrinsic interest and the obvious way they complement each other, these different activities also play a role in the

gradual creation of a common culture with regard to environmental, safety and economic issues. This alone will permit the territory to be managed in a genuinely sustainable way and the acceptance of a certain level of risk according to our decisions as regards future development ...

The European Risk Institute is a decision-making aid structure set up in April 2002 on the initiative of the Conseil Régional de Basse Normandie. It brings together partners from the public sector, industry and research with a common intention of improving the way in which regional planning policies take account of major risks based on the example of Normandy and the exploitation of an international exchange network. The Institute is currently engaged in research into industrial risks at the request of the French Ministry of the Envrironment.

www.institut-risques.org

Strategic areas, vulnerable areas, the case of Quito (Ecuador)

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Risk analysis in the metropolitan area of Quito is based on highlighting strategic areas in which prevention priorities are defined not only on the basis of the risks but also social and economic considerations.

This work is the fruit of a partnership between the Municipality of Quito and the IRD who have put in place a GIS used for town planning and development operations and for drawing up planning plans for the metropolitan area.

uito, like many major cities of the South, is characterised by the extent and the diversity of phenomena lying behind damage and disturbance to operation of its district (earthquakes, volcanic eruptions, landslides, flooding, fire, electricity blackouts, protest movements. Faced with this situation, the municipal heads do not manage to prioritize the hazards. At the same time, their limited financial possibilities force them to optimise their spending in the field of pre-

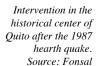
vention. It is in an attempt to respond to these difficulties that the IRD, in partnership with the Municipality of Quito, has launched the research programme entitled "Information System and Risks in the Metropolitan District of Quito." This pro-

gramme is based on using an urban database and a GIS¹ developed by the IRD at the Municipality's planning department.

Since the end of the nineteen eighties, this GIS has been used on an everyday basis both for specific town planning and development operations and for drawing up general and sector-based planning plans for the metropolitan area. The database currently contains nearly 400 localised relations covering fields as diverse as networks, collective facilities and infrastructures, censuses, land registry (cadastre), physical geography, etc. As of the early nineteen nineties, several research programmes (in particular for an "infographic atlas" and for a "seismic scenario") made it possible to feed data into and update the data in the database. The "Information System and Risks in the Metropolitan District of Quito" programme, launched in 1999, also contributes to it, on the themes of risk and of urban operation, and also from the point of view of geographic coverage.

The general philosophy of the programme is based on a simple idea: to be effective, a risk prevention policy developed at the scale of a local area system must firstly address the problem of protecting the elements and areas that are both the most important and the most vulnerable. The conceptual proposal underpinning the approach thus places the strategic elements and the major strategic areas of a local area system at the core of risk analysis rather than placing the hazards at the core, as they are as a general rule.

This approach has led to build a corpus of localised





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tics. The major strategic sites of each of the 16 fields³ have been identified on the basis of quantitative, qualitative, and spatial criteria thoughtthrough specifically for each of them4. The results have been mapped using a subdivision of the metropolitan area into grid squares with sides of 400 m, thus constituting a matrix of 28,887 grid squares. This method, based on the possibilities offered by the GIS, then makes it possible to map the strategic areas synthetically.

The major strategic sites are located on 7% of the metropolitan area. Their high con-

make it possible to establish priorities as regards analysis of hazards, vulnerabilities, and risk prevention.

The fact that the major strategic sites are concentrated on small areas constitutes a factor of vulnerability in itself. Another vulnerability results from these areas being exposed to potentially destructive hazards (6 types hazards: earthquakes, volcanic eruptions, flooding, landslides, debris flows, storage of dangerous products). Crossing the places on which the major strategic sites are located with exposure to hazards emphasises the high vulnerability of the strategic places of the district insofar as they are concerned by several hazards.

These findings constitute the starting point for research relating to forms of vulnerability other than the concentration of the strategic sites or than exposure to the hazards. The following are considered in particular: the intrinsic vulnerability of the strategic elements, the quality of access to them, their dependence on other elements of the urban system, the existence or absence of operating alternatives, and

the quality of the preparation for crisis management.

In the approach adopted, the advantage of the GIS is fundamental insofar as it makes it possible to process a large amount of information that is diverse and that comes from a variety of sources, expressed at scales that can be different. At the same time, it makes it possible to limit the information, to target it as a function of the needs of decision-takers, to develop approaches, multi-hazard and to obtain useful results on the basis of information items that can even be incomplete, while also having the possibility of updating and supplementing them (new strategic elements, hazards, etc.). ■

- 1. GIS Savane, developed by Marc Souris.
- Population, education, health, leisure, heritage, water, electricity, fuel, food, telecommunications, mobility, firms, land value, administration, capital.
- For instance, the city hall, a large drinking water production plant, a road enabling interchange to take place between the city and the rest of the metropolitan area, a hospital having a larger number of beds or offering sought-after services, etc.
- 4. D'Ercole R., Metzger P. (2002), Los lugares esenciales del Distrito Metropolitano de Quito, Quito, Colección Quito Metropolitano, MDMQ-IRD, 226 p; D'Ercole R., Metzger P., Enjeux majeurs et lieux essentiels: proposition méthodologique pour une meilleure prévention des risques (Major Strategic Sites and Essential Places: Methodological Proposal for Improved Risk Prevention), Colloque National AFPS 2003 (2003 National Symposium of the French Association for Earthquake Engineering, Ecole Polytechnique, Palaiseau, France, July 1-3, 2003).



El Beaterio (south of Quito) dwellings near a fuel storage centre.

data being compiled covering 16 fields² that can be grouped together into three main areas of investigation: the population of the city and their intrinsic needs, the economy and the management of the city, urban logis-

centration on

less than 1% of the district, centre north of Quito, shows the strategic areas, which are places that are essential for operation of the city and are major centres of the metropolitan area. These findings

Civil security and major hazards, _____ a training programme set up by the MPD

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In response to needs among local decision-makers and municipal managerial staff for major hazard prevention policies, the MPD has set up training activities on this topic.

ivil security and major hazards are often, but not always, among the responsibilities that have been transferred by Central Government to Regional Authorities in Africa. However, in most cases, this devolution is on a minor scale with Central Government retaining large areas of responsibility. This state of affairs is illustrated by the fact that the fire services, even in large cities, always, or nearly always, remain the responsibility of Central Government (and frequently belong to the armed forces). Generally speaking, the legislation that deals with the prevention and management of major hazards can give the impression that the local and regional authorities have fairly clearly defined responsibilities, however we are forced to observe that they do not necessarily have appropriate and adequate resources to cope and that the role of Central Government remains dominant.

In fact, on examination we can see that this concern is relatively new both for local elected officials and the engineering departments who assist them, and that prevention barely figures in the action plans of municipal teams, their objective generally being limited to acting after the event in order to try to reduce the effects of disasters by bringing to bear the limited technical and financial resources at their disposal.

There is therefore a considerable need to raise awareness among, and to inform and train, local decision decision-makers, elected officials and municipal managerial staff in major hazard prevention policies. Faced with this situation, the Municipal Development Partnership (MDP), has added civil security and major hazards to the topics covered by its training. As part of its policy of strengthening the capacities of municipalities, the institute is setting up an in-service training course in the maintenance and management of infrastructure and local authority facilities for managerial staff in the engineering departments of Western and Central African cities. The course consists of twoweek thematic sessions, one of which is given over to civil security and major hazards.

The session will cover the following topics in particular:

- The typology of major hazards;
- Taking account of hazards in regional planning;
- Strategies for preventing major hazards and their effects:
- The comprehensive approach to urban hazards;
- Informing and training the population.

The contributions made by those taking part in the training course confirms that African municipal officials still know very little about the prevention of urban hazards. It should be understood that the pressures they face are not the same as in the developed world so quite specific strategies are required in Africa, in particular in view of the low level of available resources.

A study carried out when the training courses started showed that most municipalities in Western and Central Africa are aware of natural hazards such as floods, ground movements and forest fires. Some even consider earthquakes. Most coastal cities (Dakar in Senegal, for example) are aware of the risks and effects of erosion in their coastal districts while other localities in zones at risk such as South-West Cameroon are concerned about the possibility of volcanic eruptions.

Most technological risk is linked to the chemical industry in general and the oil industry in particular, within which the most dangerous activity is petrol distribution. The hazards are not always really major, but they are inherent in the operation of plants and can be seriously increased when plants or hazardous product storage sites are located near residential areas. The risks connected with the transport of hazardous materials, in particular by land, are considerable and accidents are not uncommon. About three months ago, in Cameroon, a metal bridge collapsed due to a fire that started when a tanker carrying oil products skidded. Another frequent hazard which is of constant concern to municipal officials is fires at markets, which are particularly common in African towns and cities.

A considerable amount of documentation had to be produced in order to run these training courses. This takes the form not only of handbooks, duplicated lecture notes and other materials used for teaching or lectures, but also reports on professional follow-up work conducted by the participants themselves and which provide a good insight into the situation as regards civil security and

major hazards in the countries in question, at least from the point of view of local authorities. These provided an opportunity for intense discussion between participants which allowed them to profit from the personal experience of other persons on the course in addition to the lessons and

lectures given by the teaching staff.

The Municipal Development Partnership intends to bring all this knowledge together in a book on safety and major hazards in African towns and cities. The MDP has asked the Institut de Prévention et de Gestion des Risques Urbains

(IGPR) in Marseille to produce the book in view of the fact that this Institute has already organized and run training courses on the topic.

The document will be written from a "management" standpoint, taking account of the specific nature of the African context. It will describe the problem in general terms, the importance of the topic and the specific form the problem takes in African municipal departments.

Osiris-inondation: a tool for —— planning local crisis management

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The Osiris-Inondation software was developed in partnership by the Etablissement Public Loire and the Sea and River Engineering Centre (CETMF). It is a decision-making aid tool intended to assist local managers develop flood protection plans.

The Osiris research project and the experimental phase

The Osiris European Research Programme (Operational Solutions for the Management of Inundation Risks in the Information Society), which was conducted in the framework of a partnership which included public bodies and private consultancies, had the goal

of improving the management of the different phases of flood risk: prevention, monitoring and forecasting, crisis and post-crisis management, by using new information and communication technologies. It ran from 2000 to 2003.

Following a phase in which needs were identified, trials were organized and conducted at 2 sites in France on the Loire and 2 sites in Poland on the Oder.

Other trials using this software are in progress or planned for the near future: in the French Département of Finistère with the civil defence force (SDIS 29), in the Meuse basin in the framework of the Bachelot plan (EPAMA), in Picardie in the framework of a regional research programme, and even in South-East Asia (Mekong basin) in the framework of a European technology transfer programme (the ASIA-IT&C programme, which is managed by IST-ED).

Development of the Osiris-Inondation software

Subsequent to the research project, the Etablissement Public Loire, in partnership with the Sea and River Engineering Centre (the CETMEF, which is a Ministry of Infrastructure department), undertook

Publications



Problématiques de l'urbanisation du Tiers monde,

under the direction of Pablo Diaz and Jean-Louis Perrault, ERUDIT. Economies et Sociétés, Série «Développement, croissance et progrès», tome XXXVIII, n° 7, juillet 2004 The urban phenomenon is planetary and one of the crucial dimensions of globalization. Nevertheless, it raises issues for the human social sciences in that it takes very different forms in industrialized countries, while at the same time the rapidity and suddenness of urbanization in the Third World means the urbanization processes that have occurred in the countries of the North are largely irrelevant.

The concept of urbanization thus brings together situations which cannot be compared, to such a point that even a description of the studied object raises problems. Furthermore, in Third World countries, where populations are increasing, urban growth is, everywhere, producing dislocations between the population and development,

between migration and economic growth, between urbanization and rural development, between cities and hinterlands, etc. Perhaps rather than attempting to control these dislocations, it would be better to consider these inevitable disequilibria as factors of structural reform that are necessary in order to initiate a dynamic of development.

Price : €29 Contact : diaz@rennes.iep.fr

"Services en réseaux, services sans réseaux dans les villes du sud". FLUX Cahiers scientifiques internationaux Réseaux et territoires n° 56/57, Avril-septembre 2004, 152 p.

The picture of the contemporary individual is of an individual who is

connected to networks at will, with access to an ever-increasing range of personalized services, backed up by a number of economic, legal and political changes. This does not, however, mean we can state that it applies to every individual, every group, every space and every society.

Based on papers that adopt different viewpoints (analysis of collective action frameworks, the choice of operator management modes, practices and behaviours), this issue of Flux explores and asks questions about the binary opposition between being connected and not being connected in the cities of the South.

Price : €31

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to create a more powerful and user-friendly version of the prototype software. Software development is in progress and will be completed in the first quarter of 2005. It will result in a tool known as OSIRIS-Inondation. The total cost of development work, which is managed by the Etablissement, will be €120,000 ex-VAT.

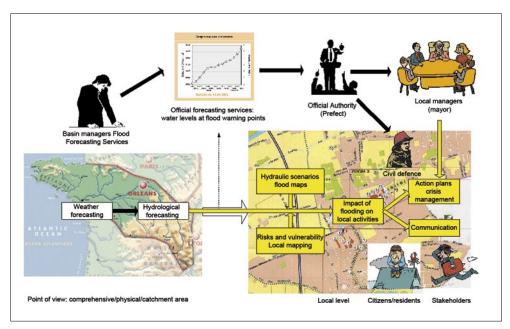
The common aim of the partners is to place a large-scale operational flood risk management tool at the disposal of central government departments, local and regional authorities, economic players and private individuals.

Osiris-Inondation is not just a computerized tool. The method and know-how involved in its use are intended to help mayors develop their own flood protection plans. Furthermore, it is a user-friendly computing tool that simplifies information sharing and the updating and consultation of the plans.

Official organization and the integration of information

On the rivers for which Central Government is committed to providing flood warnings, the official warning is based on the observed and forecast heights at certain measurement points. The warning process takes place as follows:

1. The flood warning service, which is a Central Government department, generally belonging to the Département Infrastructure Directorate or the Regional Environmental Directorate, monitors the hydrological state of rivers, makes forecasts when necessary and, when the situation justifies it, sug-



Integration of Osiris-Inundation (in yellow) within the flow of official information

gests that the Prefect issues a warning,

- 2. The Prefect warns the Mayors, usually by fax. Municipalities are divided into groups according to their vulnerability and each group is allocated to a measurement point and a warning level.
- 3. It is then the Mayor's responsibility to inform the population and take suitable measures for the municipality. The official information (the water level that is forecast at a measurement point) must than be translated into terms of local flooded areas, necessary measures and risks.

The software is intended to be used by persons who are directly confronted by floods in the field and has recently been linked up to the official forecasting service which provides input, but forecasting can also be performed outside the State system. The system will thus help local managers transform the official information (forecasts of the water level at a given point, which may be quite

remote from the municipality) into information which is of use in the field with regard to impacts on risks and action.

The procedure for use

Osiris-inondation is a complete system which includes a method and a method support tool.

The method consists of a procedure to be followed in order to centralize and organize all the information on floods which is relevant for crisis planning purposes: sources of forecasting data (flood warning bulletins) flood scenarios and maps (derived from historical records or simulation), risks and vulnerability, action plans and procedures to limit damage, available human resources and equipment. The approach is not just technical; it is based on strong commitment on the part of the various actors, network leadership and the setting up of dialogue and partnership.

World Urban Forum

The second gathering of the World Urban Forum organized by UN-HABITAT was held in Barcelona, Spain from 13 to 17 September 2004. The Forum brought together more than 3,000 delegates from all over the world: elected officials, government representatives, leaders of public and private organizations, representatives of civil society, academics and NGOs. The general theme was "Cities, crossroads of cultures, inclusiveness and integration, and the forum was centred around discussions of cross-disciplinary topics (urban governance, urban culture, urban renaissance, etc.) and specific issues (for example urban poverty, urban services, sustainable urbanization). Alongside the thematic workshops, delegates organized a large number of "networking" events to encourage and promote their activities in a very wide range of fields.

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News on cooperation

Institut Forhom

The Institut Forhom, in collaboration with ISTED, is running a training course in La Rochelle from 29 November to 17 December on "Cities and the Management of Environmental Risks". The course, which is aimed at local authority managers and the technical departments in charge of town planning, housing or the environment in developing countries, will cover three topics: the basic principles of environmental management; urban development issues and the analysis of environmental risks; the development of a risk management strategy and information and awareness raising tools.

Contact: forhom@forhom.com www.forhom.com

Geographical information systems and disaster management

In the prospect of the upcoming IInd World Conference on Risk Reduction (Kobe, January 18-22, 2005), ISTED, CNIG and AFIGEO publish "Geographical information systems and disaster management".

This collection presents practical examples of experiences implemented in France and Worldwide therefore contributing to enriching thinking on the use of new information and communications technologies at the service of sustainable development.

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Post-graduate diploma in Urban Networks Engineering in Developing Countries (ISUR)

The ISUR professional diploma is issued jointly by the Rennes Institut d'Etudes Politiques and the Université de Rennes 1. ISTED is involved in setting the syllabus, 45% of which is taught by professionals.

The diploma seeks to give students an understanding of multidisciplinary analytical grids that will enable them:

- 1. to set up or analyze projects (negotiation/financing) for introducing or improving urban network services in developing countries,
- to perform the economic, financial and institutional management of these services.

The course is intended for lawyers, political scientists managers, economists, geographers, town planners, Graduates from French Schools of Political Science (Science-Po), engineering and architectural schools, either as initial or inservice training.

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Promoting the research of PRUD

The symposium that brought the PRUD programme to a close took place from 5 to 7 May 2004 at UNESCO's premises in Paris. A volume of notes that summarized the research findings was distributed to the participants. These ten pages of text present the approach, methodology and findings of the research that has been carried out in the framework of the concerted incentive action organized by the Priority Solidarity Fund for urban research in developing countries. Thirty research teams, bringing together two hundred and sixty researchers - half of whom were drawn countries of the South - have helped to improve our understanding of cities of the South from a multidisciplinary perspective. The texts in question are now available on the Isted website www.isted.com

All the research reports can be consulted at the "Villes en développement" documentation centre, and some are due to be published. Furthermore, the proceedings of the symposium, which contain all the papers given, will be published by the Ministry of Foreign Affairs before the end of the year under the title "Governing the Cities of the South. Challenges for research and action".

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Cities Alliance 2004 Annual Report

This year's report stresses the critical need for policies and strategies to promote the positive impacts of urbanization -'Instead of debating the contribution of cities to development, more energy needs to be spent on unblocking it'. The report also illustrates how by working directly with cities, Alliance funded activities are helping to engage local authorities in the national policy dialogue, as well as encouraging them to be proactive developers of urban infrastructure by mobilizing domestic capital.

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