# The inter-organizational dependencies of local and national and national land information infrastructures – case study of Bekasi, Indonesia

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## ABSTRACT

On a global level, systems of land resource management are in place. Most of these systems rely on data acquired at local level, while the legislation and agreements on how to acquire are often made at national level. Policies of decentralization and increased autonomy of local governments have affected these relations between local and national levels. Local governments are often suddenly expected to take decisions on many issues themselves using new or reformed local organizations and information processes. In practice, however, such information-based decisions - pre-requisite for good local governance - are not taken, because the information was either not available at local level, the information could not be released from national or subnational level, or information available was not used.

This article takes a closer look at why the information processes are not sufficiently effective at local level. It is looking to a single casestudy of a local government in Bekasi in Indonesia, which is exemplary for satellite cities and regions in rapidly urbanizing and industrializing areas, and exemplary for a local level which is obliged to reform its institutional structures while being strongly influenced by a local environment. To study the underlying processes that take place in the current information infrastructure, a qualitative research is undertaken with the objective to find out why these information processes are not effective. The theoretical framework to describe effectiveness is based the theoretical framework of inter-organizational dependency relations of Azad and Wiggins (1995). This work uses 5 determinants to describe inter-organizational dependencies: Necessity, Asymmetry, Reciprocity, Efficiency, Stability, Legitimacy.

Based on these determinants the research draws conclusions on:
1) How local governments might require functional structures beyond the boundaries of the local territory and authority, and independent from vertical or national institutions.
2) How frequent and unsynchronized rotation of public employees at local level is leading to underutilization of human capacity and informal human networks in the local public sector.

# 1. INTRODUCTION

On a global level, systems of land resource management have been put in place to support multilevel government decisions and processes. Most of these systems rely on data acquired at local level, while the legislation and agreements on how to acquire are often made at national or even supranational level. The inter-dependency of these various administrative levels and systems has created expectations and voids at all these levels (Vries, 2006), of which the underlying reasons, practices, incentives, motivations and obstacles are still understudied. (Biermann, 2005) concludes in his working paper on Earth System Governance that there is still a research challenge ahead in "*how to create a global and effective architecture for earth system governance that is adaptive to changing circumstances, participatory through involving civil society at all levels, accountable and legitimate as part of a new democratic governance beyond the nation state, and at the same time fair for all participants*".

Part of this key challenge is effective information sharing and exchange among government agencies at different levels of administration. While the implementation of the decentralization policies of the government in Indonesia since 2001 (Republik Indonesia, 1999a; Republik Indonesia, 1999b; Republik Indonesia, 2004b) has been smoother than anticipated, there remain still many challenges in the work of decentral governments (Kaiser, 2004; Worldbank, 2005). One of such challenges is the adoption and incorporation of ICT technology, often referred to as e-government or digital government. This has been acknowledged by two presidential decrees, no. 6/2001 (Developing and Usability of ICT in Indonesia) and 3/2003 (Policy and National Strategy on e-Government Development) aimed at "*that government bodies central or local can understand the importance of e-government, strategic aim of e-government, obstacles that can happen on implementing e-government, way of developing, strategy and implementation on developing e-government, nationally or the bodies themselves*" (AOEMA, 2007). Also, the official website of the Indonesian Government mentions that
*To face the challenges above* [those of e-government*], the government should to make an attempt in improving the quality of human resources development. It is necessary run training on technology for government officials. Since technology changes rapidly so that the employees are also required to be prepared with mental attitude for learning and response to change. In relation to existing cultural barriers, the readiness of Indonesia to implement eGovernment depends on commitment from public official to share information and treats citizens as customers.* (Republik Indonesia, 2006)

The combination of decentralization and e-government policies has however not necessarily led to concrete improvement in local governance, let alone synchronization of local government information with regional, national or supranational systems of information-supported governance. (Radjawali, 2003) – also quoted by the report from (Gröndlund et al., 2005) - notes that the decentralization policies have created new coordination problems, which can only be addressed by "good implementation of electronic government" . The various ranking for e-readiness, e-government readiness  all show that Indonesia scores rather low as compared to other countries in the region (see (Asgarkhani, 2005; Gröndlund et al., 2005; West, 2006).  A decentral government would ideally have improved benefits and access to national and regional data through ICT (Pendit, 2003). Yet, many local governments in Indonesia still lack sustainable information resources necessary for decision making, and still share very little data among local government agencies. This makes implementation of local government activities in environment, housing, land administration and infrastructure complicated, fragmented and heterogeneous  (Vries, 2006).

For this research I zoomed in to the organizational and technical spatial information infrastructure (SDI) dealing with land information in Indonesia. I refer to this as the land information infrastructure.  I take as an example of such a land information infrastructure that of the city and region of Bekasi. In this article I aim to study why the inter-organizational information processes at local level have not been as effective as one would expect to be or as one would need to have. First I discuss the characteristics of the land information infrastructure of the case Bekasi. Than I explain the inter-organizational dependency factors relevant for information sharing of Azad and Wiggins (1995). Using these factors, I examine the case of Bekasi, with the aim to find empirical evidence of how these inter-organizational dependency factors currently play a role, and why certain practices of information sharing are taking place.

## 2. CASE OF BEKASI

To verify how local information infrastructures develop and what elements are fostering or hindering development on needs to take into account how information and information infrastructures have been constructed (technically, socially and historically). A case area was chosen which was clearly affected by decentralization policies, but where at the same time nationally guided institutions were responsible for the formulation of information policies and strategies. The decentralization process in Indonesia appeared a representative case. National policies are aiming to decentralise, and to make local governments and their administrations more autonomous, leading to rapidly changing institutional space. This policy was started in 1999 (Republik Indonesia, 1999a), but was adapted again in 2004 (Republik Indonesia, 2004a).

Worldbank reports and communication note that :
*In the most comprehensive survey to date of the impact of decentralization on public service delivery in Indonesia, the new* **Governance and Decentralization Survey 2004***, a partnership between Center for Population and Policy Studies - Gajah Mada University and the World Bank, shows that a large majority of Indonesians see improvements in public health, public education and local administrative services in the aftermath of decentralization. But most people believe the quality of police services has stayed the same or deteriorated.* ( http://www.worldbank.org/eapdecentralizes.)

On the boundary of central and decentral public administration organizations are cities close to Jakarta as the seat of the central government. Bekasi is such an example. It is part of the metropolitan area of Jakarta, which is a region that consists of a conglomeration of a number of cities, often referred to as Jabotabek (JAkarta, Bogor, TAngerang, BEKasi).  Although the area of Bekasi is administratively in province West Java, it is physically directly adjacent to the special province area Jakarta without any visible boundaries. It had an increase of more than 1 million people in 10 years to reach some 3.2 million in 2000 (Central Bureau of Statistics, 2000). Bekasi can thus be considered an urban region that can no longer physically expand, but that it is experiencing rapid changes in land use within its boundaries, mostly from rural land to urban land use (Kitamura and Rustiadi, 1997), which is either residential or industrial. These changes coincide with a large unplanned and uncontrolled influx of residents and workers from both Jakarta and the rural areas of Java (Silas, 2002). Pressure on land is large, causing a rapid change in spatial relations between land, spatial objects and rights/claims on land and these objects. Such a situation would require rapidly updated spatial information for any local government to monitor change and intervene where necessary. In other words, an efficient spatial data infrastructure would seem crucial for any sort of information-based spatial planning, management and decision making in Bekasi.

At the same time, however, the local public organizations of Bekasi are operating in a changing institutional environment. The municipality of Bekasi was split into two separate municipalities for the sake of better manageability, Bekasi city (Kota) and Bekasi region (Kabupaten). Spatial management regulations were changed several times in the past decade, partly in line with the above decentralization policies, but also partly in line with public sector reform policies aiming at more efficiency and cost reductions of the public sector. The result is that Bekasi as a region relies on heterogeneous and hybrid rationalities from both a socio-economic and institutional point of view.  As a consequence the efficacy and sustainability of decentralization policies seem to conflict with the common centrally regulated processes of public information collections and provision.

To study the effects on individual people and organizations of these various developments in their daily work, I decided to remain in the area for a period of approximately 2 months, and have personal, unstructured interviews and collect personal perceptions and artifacts. Based on initial interviews a selection of appointments with a selected number of people and organizations was made for more detailed discussions. Finally, a total of 42 formal interviews were held. In addition to the interviews, on a daily basis informal conversations were held and documentation was collected from local information sources. Various observations were made and collected through digital photographs, short video and audio recordings. The type of organizations and sectors were interviewed are displayed in Table 1:

| Government / Public sector agencies | Private sector | Other / NGO |
|---|---|---|
| Bappeda - Urban / regional planning office<br>BPN – land office<br>       BPN – section land survey and<br>       measuring<br>       BPN – section land use<br>       BPN – section land information<br>       (former local land agency – Dinas<br>       Pertanahan)<br>PBB – land and building tax<br>Land survey offices<br>Kecamatans – district (sub-municipality)<br>government<br>BPS – statistical office<br>PU – public works<br>Land use and building permit offices<br>Public sector information agencies (PSIs)<br>National sptial information agency<br>(Bakosurtanal) | Notaries, land transaction<br>officers, law firms<br>Land developers<br>Property brokers / agents<br>Land, IT and public management<br>Consultants and academics<br>National (professional)<br>Associations | Academic institutions<br>Libraries |

**Table 1. Organizations visited**


## 3. THEORETICAL FRAMEWORK

Land information infrastructures are often discussed in the context of. SDIs are commonly understood as frameworks of policies, institutional arrangements, technologies, data, and people that enable the sharing and effective use of geographic information. Inter-organisational relationships have been central to earlier studies of SDI (Campbell and Masser,1995; Nedovic and Pinto, 2000; Harvey, 2003; Harvey and Tulloch, 2006 ) and even earlier work on data sharing. Azad and Wiggins (1995) draw upon the field of organization behaviour & organization theory to apply six determinants of inter-organizational relationships that define data sharing behavior. However, the relationship with the impact assessment has yet to be empirically verified.

Determinants of interdependency in spatial information related organizations were discussed by Azad and Wiggins (1995). In their discussion of data sharing Azad and Wiggins made the following observation, which certainly holds true for the development of information sharing in an SDI: " … *any geographic data sharing effort, no matter how low in intensity, will involve a redefinition of existing tasks/structures and/or the redistribution of relative power and influence in the organizational environment*."

It can be argued that the practice of information sharing fundamentally changes inter-organizational relations. While it is technically easy, its consequences make multi-department and multi-agency data sharing fundamentally an inter-organizational affair. The efficiencies that come with data sharing are linked to some loss of organizational autonomy making significant organizational changes necessary. Organizational behavior literature has undertaken many studies to assess why some agencies choose to cooperate in face of these obstacles. A comprehensive literature review by Oliver (1990) generalized six interdependency determinants from over 160 articles. The determinants are highly relevant to SDI studies. They may well help to close some of the gaps in our understanding of why organizations collaborate in SDI and lead to insights into the impacts and benefits which motivate them. Indeed, previous research highlights that inter-organizational dependency is crucial to SDI (Nedovic-Budic and Pinto, 2000;2004; de Wehn – Montalvo, 2003; Harvey and Tulloch 2006). Oliver (1990) provides a challenge for extending analytical work on SDI benefits and impacts. She is distilling six interdependency factors which are significant for revealing inter-organizational relationships, which is further elaborated by Azad and Wiggins (1995). Table 2 provides an overview of the main factors:

| Factor | Explanation |
|---|---|
| Necessity | The formation is the result of enforceable laws, drafted by a legislator. For information sharing this refers to mandated sharing that receives differing degrees of compliance according to the perceived implications of non-compliance. |
| Assymmetry | The formulation is the result of the potential of an organization to exercise power and control over another organization or its resources. It is the factor that describes the existing inter-organizational tensions regarding power and control impact strategies organizations pursue in data sharing. |
| Reciprocity (effectiveness) | The formulation takes into consideration the degree to which organizations cooperate to pursue commonly beneficial goals |
| Efficiency | The formulation is prompted by organizations in order to improve their internal input/output ratio |
| Stability | The formulation is the result of an attempt by organizations to reduce environmental uncertainty, and stabilize long-term environment |
| Legitimacy | The formation is the result of an attempt by organizations to increase their legitimacy in order to justify their existence in agreement with prevailing norms, rules, beliefs or experiences |

**Table 2. Rationales for interorganizational relationships (adapted from (Oliver, 1990) and (Azad and Wiggins, 1995))**

## 4. RESULTS

Using the above factors I examined the case of land information infrastructure of Bekasi. The observations related to each of these factors are discussed hereafter.

## 4.1. Necessity

When looking at the mandated, enforceable data sharing in Bekasi, one can observe both a number of vertical columns of inter-related organizations each dealing with a single subdomain of the land information, and a cluster of horizontal organizations each dealing with local information only (the lines indicating the information flows – thick lot of information exchange – thin or dashed line – little information exchange):
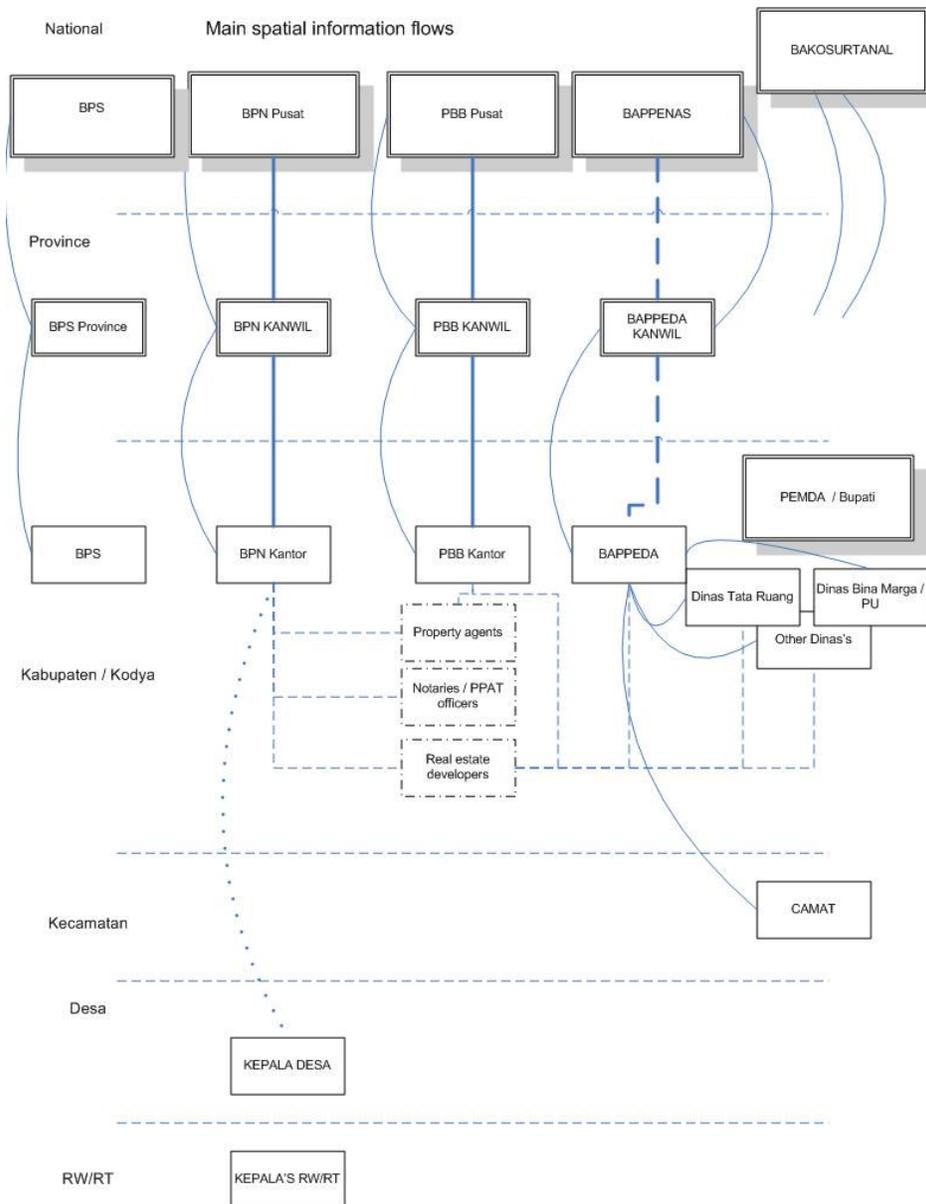
**Figure 1. Main land information flows**

It is obvious that the vertical columns are structured to carry out single-sectoral work flows, mandated by national legislations. It became evident during the interviews with local public sector staff that most public information production processes are determined at national level, and simply implemented at local level according to the guidelines provided by the national level agencies. The most prominent of such guidelines were the SPOPP 2005 guidelines of the national land office (BPN, 2005), and the land use planning guidelines of the national BAPPENAS office. The impact for such hierarchical work relations is that there is little attention for the optimization of work processes (such as joined spatial data acquisition for more than one office) at local level. It would seem beneficial to local organizations for example that once a parcel is measured by a local BPN office, that such parcel information is directly used and stored at the local PBB office as well. While this was acknowledged during interviews, local staff did not want to take large initiatives to cross organizational boundaries. This was also apparent in the use and interpretation of

an Ikonos[1] image of the area, which was available at all local offices. Rather than setting up information exchange channels, all individual organizations preferred to use the image in their own way, even if this meant that it appeared that the spatial projection of the Ikonos image was different than their own maps, or maps obtained from the national offices of Bakosurtanal. In other words, problems with the locally available data were not shared or discussed across organizational boundaries.

Furthermore, most interviewees responded that the new autonomy laws have created a feeling among most organizations that the institutional changes and changes in organizations are not yet over. As a result, most organizations are still relying strongly vertical orders and relying on vertical links, or are largely focusing their attention on new policies by the new local government. As a result, there exists a feeling of having to choose between the two options, and because of this most respondents indicated having limited insight in the cooperation possibilities with other local organizations. The local BPN offices for example indicated that after all the turbulent changes of the past 4 years, they preferred to wait for a new central directive on BPN, which was scheduled to be established in 2006. The local land use planning offices (Dinas Tata Ruang) gave a similar answer but than referring to new directives from the local government. The effect of such hesitation to act is that newly established offices , such as the Dinas Tata Ruang, was hardly known (in terms of available information) outside the local government structure PEMDA, and was certainly not yet included as a potential partners for exchange of any resources.

This is also the most recorded complaint at most organizations. The information is not complete; the scale is not appropriate, etc. This is partly because the information products have been defined at levels where there is no direct relation with customers / citizens (such as province or central level). The local autonomy has however given incentives to start developing products at local level which address these complaints more directly. BPN is thinking of developing overview maps of aggregated parcel information. PBB has developed screens with aggregated information. Still, however, there is little or no sporadic or systematic trans-horizontal information distribution, and as a whole none of the local agencies seem to have implemented an approach to more diversified customers and citizens. Customers are defined as unisectoral, non-holistic customers with non-complex information needs, instead of multi-sectoral and trans-sectoral citizens with diversified information needs.

Having noticed that most public organizations are exchanging information in a vertical way, prescribed by vertical institutional arrangements, the most prominent exception concerns the local planning office, where some transhorizontal information exchange took place. Part of the reason was that these offices had acquired high-accuracy satellite images: Ikonos (in Bekasi city) and Quickbird (in Bekasi ), These images were considered beneficial for each office, if applied as a base map behind their other geo-data. Most offices obtained these images informally, through private exchanges. On the other hand, most private agencies were almost all exclusively working at horizontal level and dealing with transhorizontal information exchange.

It was also noticed that transvertical information exchange hardly ever occurred. This is especially surprising because the national mapping coordination office and national disaster mitigation offices could play a role here.  (NES, 2006) notes that while much of the spatial information is produced and is available at national level, local governments and civil society at local level are not capable of using it, or are not involved in the creation of it. Also, most local agencies indicated never to use or obtain data from the National Mapping Agency (Bakosurtanal) because of the reasons:
-    there is no internet available (yet) to download the data
-    no funds are structurally prepared to obtain the data
The initial assumption of ICT being a similar resource for all organizations apparently does not seem to apply here, although this may only be a matter of time. More importantly, the dependency of local offices on external financial resources may be a longer term barrier to more cooperation.  This is disadvantageous to both sides of such cooperation, but perhaps it could also be explained by a lack of strategic behavior from national organizations. National agencies are perceived at local level to work and to communicate in a single sector, providing data at too high a cost, and to be too far away from the local agencies.

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[1] Ikonos and Quickbird are high resolution satellite-based images

## 4.2 Assymmetry

Most of the asymmetry can be related to the economic forces in the Bekasi regions. The combined region of Jabotabek and West/Java - Bandung is one of the most urbanized regions in the world, and attracting many migrants from rural areas (Central Bureau of Statistics, 2000), thereby increasing the (often hidden) poverty . *The most neglected group has been the urban poor, and this is increasingly serious because soon most of the population in the region will be urban. (…) . The poorest, the rural-urban migrants, are often positively discriminated against by being denied roads, electricity, water, sewerage and refuse removal services on the grounds that their settlements are illegal and are subject to clearance at any time.* (Caldwell and Caldwell, 2002).

In particular in Bekasi region local governments have little access to information which is largely generated and consolidation in the private sector. As a result local government cannot work effectively despite the information that they have institutionally at hand to create and guide socio-economic development. (Winarso, 2005)argues that the development of large scale housing by private sector, particular in Jakarta metropolitan areas, is substantial.  Yet, during the crisis, "*riots took place in some of thee real estates, which virtually have different social and economic status from those living in the new housing areas*". (Pendit, 2003) notes that: "*IT-based public information services in Indonesia is characterized as spurious and uncoordinated, resisting innovation, more concerned with automating the work process, without direct relationships between government and the equipment industry, impaired by tension as changes in some practices are resisted, and by uncoordinated efforts to resolve the problem.*"

Given the high amount of changes and development in the satellite cities of the Jabotabek metropole, one can expect many economic forces influence the organizations dealing with managing and maintaining the space and its associated information. Among the most apparent influences in the field of land use and land information in the area of Bekasi are:
- The creation of many residential areas in the form of compounds and small towns by large land developer companies, often with direct relations to banks and insurance companies.
- The creation of large industrial complexes, mostly from foreign companies.

Large companies are buying up land and rapidly developing it towards residential and industrial use. Both of these developments seem to be largely driven by financially strong organizations, outside the public sector. Yet, since there are both public and (the change of) private land at stake here, the public sector is involved in the process, and (resource) dependency relations – formal and informal – are created along with time.

With regards to information exchange it was reported by a number of respondents that very little information from these larger companies is shared with the local agencies. Often the local decision makers do not have the information at hand, while the larger companies may not necessarily have any benefits to share their information.  A mutually beneficial relation is to cater for the lack of information resource at the local government by some form of financial resource. This mutually beneficial relation has led to situations where:
- "Entertainment" fees are provided to obtain and "manipulate" information
- Internal costs are used to revise and/or create information according to own needs

Both of these aspects can be considered symptoms of asymmetric information access, and asymmetric dependency relations.

## 4.3. Reciprocity

Reciprocity as a factor for cooperation and land information exchange was seldom encountered. The only exception concerned an informal exchange of Ikonos (in Bekasi city) and Quickbird (in Bekasi region) images. These high-resolution images were mostly used as a common reference for other images or data to overlay, even if the other data needed to be re-projected or transformed. It seems remarkable that these

images would have this framework data function where there would also be alternatives from Bakosurtanal for example. On the other hand, the data are exchanged informally and thus do not constitute part of a formal inter-organizational cooperation.

Where one might expect a degree of reciprocity would be in the relation with customers and/or users of information products. But, customers are mostly viewed as uniform and seldom viewed as part of an information chain. This perception of a uniform customer can also be felt in reports on the lack of use of spatial information, such as the one from NES (2006). In this report it is argued that local communities did not understand the information products. However, the fact that local communities may be different and may have specific information needs was not addressed. On the question why such a situation exists, the majority of public staff at local level responded that they were following instructions and business processes predominantly set-up in a vertical way. Loyalty lies primarily within the organization itself, and incentives to cooperate at local –despite increasing local autonomy - has less priority.  Most were aware that this is resulting in heterogeneity of technical descriptions of spatial information at local level, and all also confirmed that while the need for horizontal and fragmented  information exchange seemed obvious. Yet, the following reasons were given why this didn't take place:
-   fear for repercussions – not following vertical instructions
-   bureaucratic procedures to contact other agencies; has to go upwards first and than downwards
-   question of authority is not always clear

In such a context, reciprocity (=degree to which organizations cooperate to pursue commonly beneficial goals) as a factor for inter-organizational relations can only be very low.


## 4.4 Efficiency

Efficiency motivations to exchange inter-organizational information were observed in different situations:
1)   vertically, within one domain
2)   horizontally, in case of subcontracting

Especially within the internal columns of the larger organizations such as BPN and PBB efficiency has become an issue of concern. The SPOPP 2005 guidelines within BPN do not only provide clear process diagrams of how each process needs to be carried out, but also provide performance parameters.

Subcontracting of technical work takes place especially in organizations such as the local planning offices, which do not have sufficient access to data from the vertical organizations. In particular local planning offices seem to have local funds to subcontract the collections of spatial data. These organizations were often able to subcontract also because of having received increasing funds after decentralization policies. It was perceived by these local offices as a more efficient practice of information collection and sharing than having to find data at other local or national offices.


## 4.5 Stability

From a resource perspective, stability can also be explained as the internalization of resources. One of practices that mainly vertical national and regional organizations use to reduce environmental uncertainty among local organizations is the rotation of human resources. This is in fact an internalization of human resources. It was often quoted that the main reason of rotating human resources among the governmental agencies is to provide motivation among local staff and human resource development. Moreover, it was argued that it provides better affinity of staff with other sectors and their activities.

While the practice of rotation could be understood from a general management behavior within organizations individual staff reported having some difficulties with this practice:
-   Staff living in one area and working in another. A main result of this could be a lower affinity with the area of work, and lower incentives to invest in local contacts.
-   The technical staff moving around from office to office. In particular for the geo-ict staff or those

dependent of this technology, this is difficult, because once skilled people leavem they leave a void in knowledge and experience which remains difficult to replace.
- The facilities and staff capacities in the new workplace may be very different from the previous one. This was especially reported by staff who had been shifted from Bekasi city to Bekasi region. Where the city had a lot of support from national agencies – many staff was shifted from a national agency to this city – they also had access to the technically skilled or political (financial) influential people at higher levels. In Bekasi region – which was newly proclaimed some ten years ago – the facilities were not yet optimal, and the staff was not always attached to this.

On the other hand, the non-government customers did not find the rotation within the public sector a problem for their own businesses, and they used the stability factor as a main argument. The argumentation during interviews was often that the offices and local practices stayed the same and their own businesses were not hindered by the government rotation. Although this argument is not directly related to information exchange as such, it indicates that most private organizations, including offices such as local notaries, work very independently from local government. Both notaries and developers only work in and for a particular city & region, and especially the developers invest in their own data collection for that region. Data exchange between local private sector and local government is not happening, and it is not unlikely that the frequent changes in government staff may be a reason for that.

One of the indications to support the idea that informal networks of human resources would play a different role in local SDIs as compared to national SDIs concerns the example of the construction of a provincial NSDI. The provincial SDI resulted in almost no transvertical information exchange. Although at provincial level guidelines had been developed how to develop information exchange (personal communication), none of the staff who were interviewed at local level was aware that the initiative existed. Transvertical human resource exchange could perhaps solve this problem partly, however, the role and the financing of the provinces may prevent this possibility. With the autonomy laws (Republik Indonesia, 1999a; Republik Indonesia, 2004a) the new role that the provinces could play has remained unclear up till now. An immediate reaction was however that many interviewed staff indicated to opt for working for the provincial offices, as there their salaries and appointments could be guaranteed through government budgets. A possible role of provincial offices could be to coordinate human resource development and short term upgrading of staff. Many staff at local level indicated however that any possibilities for short term training had decreased since the government reform. As long as this role of provinces remains unclear it is not likely that transvertical, or even vertical, information exchange is accelerated.

An indication that strong vertical rotation structures were not conducive to internalization of the human resources was the fact that the local BPN office of Bekasi city had collected all kinds of geo-information in digital format of areas which were physically outside their territory (for example, because the satellite images were beyond their physical territory, but the landscape obviously continues), but it was however not possible to provide this information to the adjacent Bekasi region agencies, because of procedural reasons.

## 4.6 Legitimacy

Legitimacy motivations were found through the emergence of new, alternative structures and organizations, mainly targeted towards pragmatic information exchange, not necessarily related to formal, vertical structures. An alternative to the current land information exchange mechanisms was offered by one of the respondents. The idea was given to create a functional body which could operate largely independently from "territorial" government agencies, and which could deal with spatial information for the whole metropolitan area. Such a body would not have institutional links to either province or local municipalities, and as such no asymmetric dependency relations. There are some examples of such more functional institutional structures in Indonesia, and some are already exist in the area of Bekasi:
1) The Badan Infokom – information agency
2) Dinas Pertanahan – land service agency

The Badan Infokom in Bekasi city was mainly set-up to provide information to the public on government

procedures and general information. Yet, it has the mandate to operate between the various agencies of the local government. As a direct consequence, it has the authority to request for information produced by each agency, and it may publish all information in aggregated form. In other words, it would only be a small step to include spatial information, if only the spatial information providers were institutionally linked to the local government. From a resource perspective, the Badan InfoKom has set up mutual dependency relations with all public agencies: funding in exchange for information.

Secondly, the land agency - Dinas Pertanahan – was only in existence for some two years. In Bekasi city it assembled all spatial data and produced an atlas of the whole region containing many layers of information. The Dinas Pertanahan ceased however to exist, and the potential for transhorizontal information exchange therefore as well. It acted as a legitimate inter-organizational body, compiling and aggregating data from different sources.

A particular institutional set-up for information resource exchange found was that of a laboratory. The Agency of Survey and mapping of the Jakarta special provincial area used to be such a laboratory. As a laboratory it had the possibility to focus on spatial data collection and provision without any structural links to the local government agencies. Such a unit would have the advantage that it could operate independently, outside the "bureaucracy", yet with a functional focus on spatial information with a singular functional task needed in local governance. This would be similar to what was described by (Korsten et al., 2002) for the Netherlands municipalities, for example. A technical unit or laboratory, acting as an agent of various local governments, financed by both local governments and private consulting activities, and dealing purely with information services for public purposes.

Finally, an alternative could be privatization of the public information providing agencies. Technically, this could be possible in Indonesia via the so-called BUMN – Badan Usaha Milik Negara – State owned enterprises. For Indonesia these have been recently researched by (Irwanto, 2006a; Irwanto, 2006b) from a financial performance perspective, although none of the researched agencies was dealing specifically with spatial information collections or provision. Furthermore, during the interviews few government staff appeared very supportive of possible privatization plans. The main reason was that the final information and effects of the information have a public character.


## 5. CONCLUSIONS

When reviewing the inter-organizational factors to exchange land information, two prominent factors emerge why organizations at local level currently exchange information: necessity and stability. Both are very prominent reasons in larger organizations such as BPN and PBB, where the human resource capacity is internalized over the whole organization. Many staff is replaced / rotated from top to down and vice versa. Furthermore, it can be concluded that the factors reciprocity and efficiency factors also exist, but mainly inside a particular domain or vertical column of organizational links (i.e. intra-organizational). Legitimacy is sometimes a factor, but is not always a successful factor, because a legitimate reason to interchange has been denied on various occasions by external factors of re-organization and revised decentralization policies.

What emerges, however, as key obstacles in the information exchange in Bekasi are two main issues:
1) Related to organizational structures: On average, local organizations either heavily depend on external organizations for their information collection and aggregation, or are too inward looking. Both have a negative effect on the overall information infrastructure. A possible solution might be generating more functional structures beyond the boundaries of the local territory and authority, and independent from vertical or national institutions.
2) Related to human resources: While the rotation of human resources among local offices has a number of advantages, frequent and unsynchronized rotation of public employees at local level is leading to underutilization of human capacity and informal human networks in the local public sector.

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