

From Dual Disparities to Dual Squeeze: The Emerging Patterns of Regional Development in Taiwan

Jeffrey Hou

This paper surveys the different regional development strategies emerging in Taiwan in its current political, institutional, and socio-economic context. It argues that the current strategies reflect and reinforce Taiwan's dual disparities: the persistence of regional economic disparity in spite of increasing GDP, and the institutional disparity of a highly centralized regional economic development planning framework for an economy based on localized networks of small and medium-sized enterprises. In examining the existing strategies, this study finds a dual squeeze of the state-centered institutions on the one hand and local political interests on the other as the central problem in regional development in Taiwan. This has led to the pursuit of environmentally costly strategies for development in logging regions. This paper argues that Taiwan's regional development efforts will not be effective at encouraging endogenous economic growth in the less urbanized regions unless regional-level environmental, economic, and social concerns are recognized and incorporated into development plans. This will likely require the restructuring of the existing institutional and political environment.

Introduction

Regional development in Taiwan increasingly reflects the distorted product of state-centered institutions and intensifying political competition at both local and national levels. In recent years, increasing local political autonomy and competition along with the imminent economic restructuring in preparation for WTO accession have fueled the pressure for regional development particularly in the less urbanized regions of Taiwan. During county and city elections, economic stagnation in the less urbanized regions forces competing candidates to embrace regional development policies. In national elections, amidst an increasingly competitive multi-party system, major development projects also become popular campaign promises. However, instead of engaging in coordinated efforts to address economic, social, and environmental issues in the regions, regional development is fast becoming the arena in which local factions manipulate their political-economic ties with the state and party apparatus on the one hand, and the Central Government and the ruling party eagerly seek political support at the local level on the other hand.

This paper surveys the different regional development strategies emerging in Taiwan in its current political, institutional and socio-

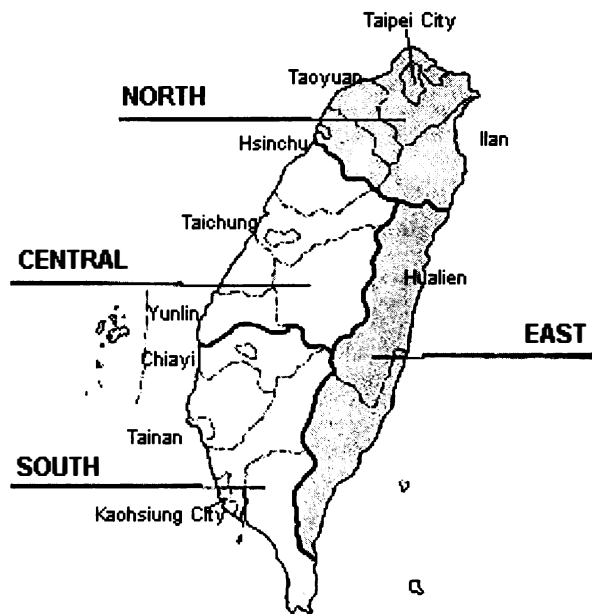
Regional Development in Taiwan, Hou

economic context. In particular, it examines the current context of *dual disparities*—the persistence of regional economic disparity despite high levels of GDP, and the institutional disparity between the state-centered regional economic development planning framework and the well-known flexible and localized networks of small and medium-sized producers. It explores the answers to three main questions: *What are the patterns of current regional development strategies in Taiwan? What are the problems associated with the strategies and patterns? Specifically, what are their environmental linkages and implications?* In examining the five identified patterns of strategies—*technopolis development, spill-over development, smokestack chasing, mixed no-match, and sustainable alternative*, this study finds the *dual squeeze* of the state-centered institutions on one hand and local political interests on the other as the central problem in regional development in Taiwan. Because of the failure of state-centered institutions and local political interests to engage in coordinated efforts and address related long-term social and environmental issues in the regions, the current strategies often produce shortsighted and incompatible development. In particular, this study finds the absence of environmental considerations in current strategies to be an undermining factor in regional development: one that threatens the environmental integrity of the regions. This paper argues that regional development efforts can be effective in encouraging economic growth in the less urbanized regions in Taiwan. However, the failure to recognize regional-level environmental, economic, and social concerns may drain limited resources, potentially endangering the future well being of the regions. The result may be reinforced regional economic disparities despite the intensifying interest in regional development. Solutions to the existing problems should include a restructuring of the power relationships by devolving a greater share of the economic development responsibilities to local governments.

Identifying Regions in Taiwan— Spatial Context of Regional Disparity

Taiwan is typically divided into five geographic units—North, Central, South, East and the outlying islands. The regions are easily distinguishable in terms of economic activities, population and physical characteristics. The northern region with Taipei at its center is the most urbanized and populated. The central and southern regions, punctuated by a few major cities, have been predominantly agricultural, but are now rapidly becoming industrialized. The eastern region, known for its rugged coastal landscape and poor accessibility, remains largely excluded from major development. The outlying islands have also been excluded from economic development.

Figure 1: Planning Regions in Taiwan



Source: CPA 2000

In terms of population, the northern region accounted for 42.92 percent of the national population of 20.8 million in 1995. In particular, Taipei county and Taipei city together have more than a quarter of the entire population in Taiwan. The southern region and the central region have 28.92 percent and 25.13 percent, respectively. The eastern region only has 2.77 percent (DGBASEY 1998b).

Administratively, Taiwan is divided into two major cities, Taipei City and Kaohsiung City, and the so-called Taiwan Province that consists of the remaining five cities and sixteen counties. In addition to the jurisdictions of cities and counties and the geographic units of North, Central, South and East, the Council of Economic Planning and Development (CEPD) at the National level also divides the country into a series of "Living Circles" as larger aggregate units for planning purposes, and as basis for funding specific projects. Each "Living Circle"

typically encompasses one county and one major city (CEPD 1998b).

Among the variations in geographic and administration division under the existing institutional and political conditions, individual cities and counties with their own administrative jurisdiction provide the most direct unit of analysis for locally initiated strategies. The jurisdictional boundaries of cities and counties determine how local officials and representatives are elected, and are therefore major factors in local politics that in turn influence choices for economic development. Also, because most current regional development strategies are initiated at the county level, this study looks at regional disparity and development strategies mainly at the county level.

Cities and counties tend to be divided along geographical features, such as watershed boundaries upstream and major rivers downstream. Therefore, they also provide the appropriate units for analyzing environmental linkages and the implications of development.

The Dual Regional Disparity—Economic Institutional

Taiwan has experienced dramatic economic growth in recent decades. It has recently ranked 14th in total export, 12th in outward investment, and second in foreign exchange reserves in the world (MOEA 1998b). It also has the world's third largest information technology (IT) industry, behind only the U.S. and Japan (EYNSC 1997; *The Economist* 1998). However, behind this image of economic achievement, the level of economic development varies significantly from one region to another. In fact, much of the economic development in the decades since 1960 has been based on the exploitation of regional differences between rural and urbanized areas for the provision of labor and capital for growing industries (Sun 1988). Regional socio-economic differences are clearly noticeable through comparisons of household income level between counties and cities. With the exception of highly urbanized Taipei, Hsinchu, and Taoyuan Counties where many of Taiwan's high-tech firms are located, the average disposable household income is consistently lower than that of the major urban areas. The average income in the poorest area, Yunlin County, is only 64% of the average income in Hsinchu County, and only approximately half of that of Taipei City (Global Views Monthly 1998).¹

Concentration of firms corresponds with the regional population breakdown. Almost fifty (46.7) percent of firms are located in the northern region, while 26.1 percent and 24.3 percent of firms are located in the southern and central regions, respectively. The eastern region and the outlying islands account for less than 3 percent (DGBASEY 1998c). However, in terms of per capita GDP, there are significant regional disparities: the northern region leads with NT\$510,389², while the eastern region has NT\$181,792 (DGBASEY 1998b). Patterns of GDP per capita and concentration of firms largely corresponds with

the urbanization and industrialization of the area. The counties with higher percentages of employment in agriculture, fisheries, and mining, and with a larger area of cultivated land tend to have lower GDP per capita. Administrative resources at the county level also largely correspond to the wealth of the regions.

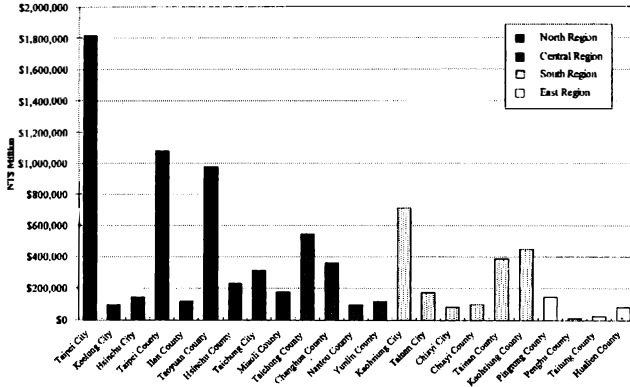
On the other hand, economic development in Taiwan is known for its bottom-up success through flexible and localized networks of small and medium-sized enterprises. Over 95 percent of Taiwan's 930,000 registered companies are small and medium-sized enterprises (AFP 1999). These companies account for nearly 52 percent of GDP and 78 percent of total employment while utilizing only 36.5 percent of total domestic capital (DGBASEY 1998c). In comparison, large corporations account for 48.2 percent of GDP and only 22.46 percent of total employment, while utilizing 48.2 percent of total domestic capital. However, despite the vibrant and localized network of firms, much of Taiwan's economic development planning has traditionally been conducted at the national level and is dominated by national policies and interests. There is not a single regional level economic planning agency. Government economic development planning is conducted almost exclusively at the central level under the Council of Economic Planning and Development (CEPD) (in charge of designing long term economic development plans and policies), and the Ministry of Economic Affairs (MOEA) (in charge of the development of industrial parks, technological innovation, trade, and the development of energy and water supply projects). This institutional disparity is reinforced by financial and legal frameworks. The majority of tax revenues go to the Central Government which controls funding for major projects and programs. In terms of a legal framework, the Regional Plan Act has been in place since 1974. This law enables (but does not require) the central and local governments to produce regional plans to guide economic activities, as well as conservation and utilization of natural resources in a given region. Under the Act, county governments are given funds to conduct countywide comprehensive planning, but the plans are only for consultation and have no legal authority.

Ongoing Political and Institutional Changes— Rising Local Competition

Since the late 1980s, with the process of political liberalization, the centralized control of resources and planning at the central government level has increasingly been challenged by elected officials of local counties and cities, especially as more independent and opposition party candidates have been elected into office at the county and city level. In the most recent county-level election (1997), the main opposition Democratic Progressive Party (DPP) captured the majority of the 21 county magistrate and city mayoral seats,

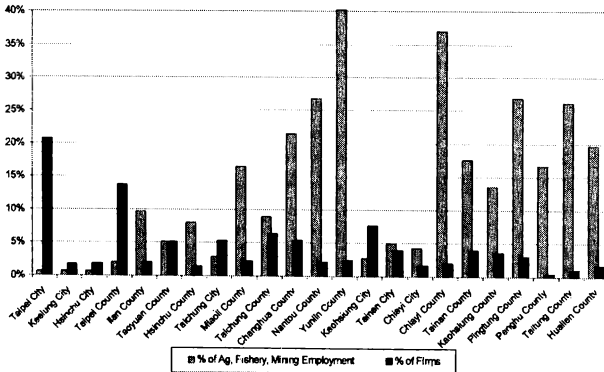
Regional Development in Taiwan, Hou

Figure 2. Gross Product by City and County, 1991



Data Source: DGBASEY 1998c

Figure 3. Distribution Of Firms (1996) in Contrast with the Percentage of Employment in Agriculture, Fishery and Mining (1995)



Data source: DGBASEY 1998c

creating a situation where the majority of the local counties are under DPP administration while the National Government is held by the ruling Kuomintang Party (KMT). Even before 1997, conflicts between the Central Government and local administrations had already erupted over a series of controversies involving major development projects proposed or supported by the Central Government but opposed by local county or city governments. In 1990, the Ilan County Government, then under the administration of an independent magistrate, led a successful movement against the proposed 6th Naphtha Cracker Complex—the largest private investment in Taiwan at the time—on the grounds of environmental protection. The developer, Formosa Plastics, was forced to seek another site. Since the early 1990's, the Taipei County Government under successive DPP administrations has opposed the building of the 4th Nuclear Power Plant—the third one in the county—by refusing to grant construction permits.

Since the mid-1990's, DPP administrations in Kaohsiung County and Pingtung County have also opposed the construction of two major dams in their counties to supply water for high-tech and heavy industries in neighboring counties. In 1997, the newly elected Taichung County Magistrate ran on the platform for public safety and environmental concerns and rejecting the German corporation Bayer's plan to build a chemical plant in the county. The project was strongly supported by the Central Government and would have become Bayer's largest manufacturing facility in Asia. The project was expected to boost the Central Government's policy for turning Taiwan into the "Asian Manufacturing and Operation Hub".

All of the above projects were either proposed or highly favored by the National Government, while the counties opposing the developments were all under DPP administrations. However, rather than being simply political struggles, the conflicts also expressed the different visions, perceptions of problems, and concerns for regional development between the National Government and the local level. The conflicts exemplify the widening gap between national policies and local aspirations, and the tension between Taiwan's state-centered institutional framework and local power in the context of democratization.

Three major changes are currently underway that are likely to further intensify the development controversies at the local and regional level: decentralization, democratization, and WTO membership. The first is the result of the 1998 streamlining of the Provincial Government. Under the new arrangement, the counties and cities formerly under the jurisdiction of the Province are expected to gain more administrative authority. This change is also expected to result in more direct interaction between city and county governments and the national-

level agencies. At the same time, the new arrangement could just as well result in Central Government's takeover of administrative authority and resources from the provincial level agencies. This controversial move has already impelled county administrations to demand a higher share of tax revenues as well as other administrative resources and authority.

Increasing democratization has forced the ruling party and the central government to seek electoral support. The importance of elections and the continuation of centralized state institutions create opportunities for locally elected politicians including the national legislators and local officials to exchange political support for central government policies in return for projects funded by the central government. The increasing influence of the locally elected politicians creates a *new power relationship* in state policy decisions without having to change its institutional framework. This new power relationship is seen most vividly in the siting of major construction and development projects such as science parks, in which the locally elected politicians have attempted to sway the final decision without changing the institutional framework of decision-making.³

The third major change is the anticipated accession of Taiwan to the WTO. Free trade under the WTO is expected to render local agricultural products less competitive against foreign imports. One report in Taiwan projected that farm crop production will suffer the largest decline (11.03 percent) in the agriculture sector (CNA 1998). Already in recent years, with diminishing profits for agriculture production, there has been wide speculation of agricultural land and increasing pressure from landowners and developers for conversion into non-agricultural development. In the last few years alone, between 4,000 and 6,000 hectares of farmland have been rezoned annually for commercial and industrial uses (CNA 1998; COA 1998). Membership in the WTO is expected to transform additional agricultural land particularly around the urbanized areas into industrial, commercial, residential and recreational land uses, which will likely reinforce the economic disparities across these regions.

Patterns of Current Regional Development Strategies

In response to the above-mentioned changes and growing political competition to impress voters, county governments have been struggling to come up with new economic development strategies at the local and regional level. Some strategies have shown signs of success, while most still await concrete results. To provide a comparative analysis, the following identifies and categorizes various approaches recently adopted by local administrations.

1. Technopolis Development

The most popular strategy among local counties and cities has been to take advantage of growing high tech industries by competing for Science Parks. Taiwan is a world leader in IT industries. The main component of the Central Government's policy to facilitate the growth of high tech industries is the development of "Science Parks". In the 1997 *White Paper on Science and Technology*, the Central Government's vision of Taiwan as a "High Tech Island" includes the development of "Core Science-based Industrial Parks (SIP)", "Satellite Science Parks", and "Science Cities" (EYNSC 1997). Each of the core science-based industrial parks is expected to have 200 high tech firms with a total annual turnover exceeding NT\$400 billion (EYNSC 1997). In Taiwan's first science park, the Hsinchu Science-based Industrial Park (HSIP), a total of 174 firms are in operation with an aggregate turnover of NT\$299.2 billion (EYNSC 1997). In the region that encompasses both Hsinchu County and Hsinchu City, IT industries account for 60 percent of the region's manufacturing output which in turn accounts for 75 percent of regional gross product (DBGASEY 1998c). In 1995, technology-intensive industries accounted for 37.5 percent of all manufacturing output in Taiwan. This figure is expected to grow to 40 percent by the year 2000 and 50 percent by the year 2010 (EYNSC 1997).

The most dramatic example in the competition for Science Parks is the recent decision concerning the location of the second SIP modeled after the HSIP. Following a fierce competition with the neighboring Kaohsiung County, the predominantly agricultural Tainan County succeeded in lobbying the National Government for the location of the second SIP. Competition for the Science Park involved a showdown of local and national political-economic alliances that exemplifies the new power relationship between local and national governments. The Kaohsiung County administration in alliance with locally elected politicians in the National Legislature pressured national-level agencies in the decision-making process. Centralized decision-making at the national level prevailed in deciding to locate the second SIP in Tainan, but at the cost of the director of National Science Council (NSC) being forced to resign (Yang 1998). The resignation of the NSC director indicates the increasing influence of locally elected politicians at the national level.

In addition to the second SIP, several Satellite Science Parks are also in the process of construction or planning. Tainan City is having a manufacturing-based high technology park developed by the Ministry of Economic Affairs, and is aggressively lobbying for a complementary software park. A Satellite Science Park is also under construction in Yunlin County. In addition, a software park has been planned for the

Nankang area in Taipei City. Currently, the third SIP is being planned by the NSC, and undergoing a site selection process. A total of 8 counties are competing with each other for the third SIP (Commerce Times 1998). Elsewhere, counties such as Kaohsiung and Ilan have also called for development of high tech industries under the counties' economic development policy. However, no project has been actually proposed or granted by the Central Government, nor have the counties' plans attracted significant private investment.

2. *Spill-over Development.*

Several counties have oriented their strategies to take advantage of growing economic development in the neighboring counties and cities. The clearest example is Taoyuan County, located between the Taipei metropolitan area and Hsinchu, the core of Taiwan's high tech development. In addition to already attracting several private high tech development projects, the county government has also encouraged growth of commercial development and the service sector by allocating mixed-use commercial and industrial zones for building major shopping malls, convention centers and recreational facilities (Taoyuan County Government 1998). The strategy takes advantage of both the growing economy in the region and available land resources in the less developed rural counties. Tainan County and Tainan City are also eager to take advantage of spill-over effects from the new Tainan Science-based Industrial Park. The result has been intensive land speculation. In the Hsinchu area, spill-over effects have already materialized in the form of sprawling residential and commercial areas around the Science Park, not to mention the general industrial restructuring of the region (Leu 1997).

3. *Smoke Stack Chasing*

For the poorest regions, with no immediate connection to the regional growth centers and with only inexpensive land to offer, heavy industries are often welcomed by the local officials as a quick fix for their stagnant economy. The 6th Naphtha Cracker Complex (rejected by the Ilan County) is currently near completion in the coastal area of Yunlin County, the poorest county in the nation, where it is welcomed by the county administration. In addition, more industrial parks are currently being planned in the county by MOEA. The Central Government also recently approved the selection of Chiayi County, also a poor agriculture county, as the location for the 8th Naphtha Cracker Complex, a joint development of state-owned China Petroleum and other private corporations.

In Tainan County, a major controversy has occurred involving a proposed major petrochemical and steel-manufacturing complex, the Binnan Industrial Complex. The proposed complex will occupy a site of over 2,000 hectares along the coast of Tainan County, with an

estimated annual production value of NT\$ 335.8 billion (US\$ 10.5 billion) and a total investment of about NT\$ 414 billion (US\$ 12.9 billion). The proposed complex is controversial because it would be sited in one of the last remaining lagoons on the west coast of Taiwan, threatening a productive fishery that employs 16,000 people and the wintering habitat for half of the world's population of the endangered black-faced spoonbill (*Platalea minor*). The industrial complex is also criticized for requiring massive water transfers in southern Taiwan, and the production of CO₂ emissions equivalent to 25-31% of Taiwan's total CO₂ emissions in 1990 (Kondolf and Hou 1998).

4. *Mixed No-Match*

Lacking coherent policies while seeking to maximize their economic development opportunities, several counties have adopted a mixed approach. In many cases, proposed development projects have been highly incompatible. For example, in Hualien County, a scenic region in eastern Taiwan, the KMT administered county government has sought to expand its tourist industries, but at the same time has also accepted the Central Government's plan to move major cement companies into the county under the National Government's "Move East" policy (to relocate mining and cement industries to the eastern coast). Not until only recently, under pressure from residents in the county, did the county government reluctantly show resistance to heavy industry. In Tainan County, even though the administration has successfully lobbied for the location of the second SIP and is expecting the growth of high tech industry, it has also welcomed the proposed Binnan Industrial Complex. According to an independent review of the project's environmental impact assessment (EIA) documents (Kondolf and Hou 1998), the proposed project will compete with the second SIP for water supplies and will produce major air pollution impacts on the Science Park and the region. In addition, it will also undermine and preclude other development possibilities in the coastal area.

5. *Sustainable Alternatives*

Resisting the lure of quick industrialization, a number of counties have placed the protection of environmental and cultural resources and quality of life as their priority and sought to pursue a more sustainable regional development strategy. The most successful example is Ilan County. Since rejecting the 6th Naphtha Cracker Complex in early 1990's, the county administration has aggressively tried to develop a tourist-based economy to take advantage of the county's rich natural and cultural resources and proximity to the Taipei metropolitan area. In addition to the policy of promoting tourist development, the county has also conducted the most aggressive county-level comprehensive planning to guide regional development and land use, based on a target

for population and projected growth in anticipation of a major freeway currently in construction (connecting Ilan and Taipei) (Ilan County Government 1997). Although tourist development in Ilan is still in an early stage and the county's average household income still lags behind more industrialized regions, the county's effort in protecting its environmental and cultural resources and quality of life has gained wide acclaim locally and across Taiwan. According to a recent survey (Global View Monthly 1998), the residents of Ilan County take the highest pride in their county compared to residents in all other counties in Taiwan. Following in the footsteps of Ilan County, Pingtung and Nantou Counties, both scenic agricultural regions, are also seeking to develop a sustainable economy based on the integration of tourism and agriculture.

Patterns of Problems: Assessment of the Emerging Strategies

The patterns of current strategies reveal several major problems facing the regions and concerning the state of regional development in Taiwan. These problems can be identified by examining existing patterns within a political and institutional context.

1. Dominance of state-centered institutional arrangement

The patterns of strategies such as technopolis development, smoke stack chasing, and mixed-no-match as well as the institutional arrangement and politics behind the making of such strategies show the continued dominant role of the National Government and national economic policy in influencing local and regional development options. The dominant role of the National Government is seen from the site selection of Science Parks to the facilitation of major industrial projects. The strongly state-centered institutional arrangement has made planning for regional development both difficult and unimportant. For example, the announcement of major projects has been allegedly linked to widespread land speculation, which in turn influences planning processes and decisions through local political processes. Conversely, counties without Science Parks are excluded from having high tech investment and infrastructure, and are constrained from developing or attracting IT industry. For example, Ilan County with several distinguishing advantages, such as quality of life and proximity to Taipei, has largely been excluded from high tech development. On the other hand, counties with state-encouraged heavy industry projects are forced to follow this separate, particular development path.

In addition to the siting of development projects, the Central Government also plays a dominant role in the approval process of major development projects. Local counties cannot turn down a major development project except through refusing to grant construction permits. This state-centered structure also results in a lack of autonomy

or incentives for regional coordination on specific issues such as infrastructure and resource planning. In addition, the effect of a centralized decision-making process combined with the rising influence of local politicians in the national legislature has led to the alliance of local and national political interests, creating a new power bloc in which the dominance of a local political faction is reinforced through connections with the state and party apparatus.

2. Dominance of a project-based approach

Since the National Government's economic development policies focus mainly on the development of industrial parks and major infrastructure projects, the development at the regional level is predominantly project-based. This project-based approach results in a lack of horizontal integration into other sectors of the regional economy. While the approach has arguably worked in the case of HSIP, industrial park developments in regions elsewhere do not necessarily contribute to the growth of other sectors of a region's economy. For example, the 6th Naphtha Cracker Complex under construction in Yunlin County is built on an artificial island off the coast of the county and isolated—spatially and economically—from the rest of the predominantly agricultural region. There is not a clear indication of how projects such as this will benefit the local agricultural and fishing communities. The new industrial complex using imported foreign labor provides few job opportunities or direct linkages to the existing economy in the region. The main beneficiaries have been developers and the downstream industries in the more industrialized regions outside the county who gain access to low-cost materials. The result is continued regional imbalance.

This project-based approach reflects how the government bureaucracy in Taiwan traditionally approaches economic development. It lacks clear strategies in linking infrastructure investment with the existing resources and economy in the region. Even tourism developments by many local governments have adopted a project-based approach, hoping that benefit will eventually trickle into other sectors of the local economy.

3. Lack of administrative capacity and resources

Many of the current strategies show a lack of administrative capacity and resources at the county and city level for conducting systematic planning and implementation. This is again linked to state-centered institutional structure with a concentration of resources at the Central Government level. Because of a lack of administrative resources and professional skills, much of the formulation and implementation of the local and regional development strategies are occurring in a haphazard way. This limitation results in an apparent

lack of innovative solutions and in turn contributes to the prevalence of traditional project-based and infrastructure-building approaches. Most current strategies fail to address the dynamic network of firms which has been the strength of Taiwan's economy, recognized also in successful cases elsewhere. Even if the local government has the capacity and political will to conduct regional development planning, much of the resources and authority for implementation are still controlled at the national level, leaving the local governments without resources to implement plans.

4. Dominance of political interests and short-term vision

Taiwan's development strategies lack a visioning process to set specific economic, social, and environmental goals for the regions. Increasingly intense political competition between the ruling party and the opposition party often encourages short-term economic development without a long-term vision of environmental and social well-being. Political interests play an important role in the current patterns of development, either by responding to party command, satisfying voters or serving the political-economic alliance. This intensely political process results in the overshadowing of long-term vision with short-term interests. Many strategies do not have specific aims in addressing the problems of economic development in the region. For example, current strategies by poor agricultural counties to attract heavy industry could lock the counties into its traditional role as "supply regions" (Jacobs 1984). Heavy industry is likely to produce a false sense of development success and will preclude other economic development opportunities through depletion of critical resources. These strategies fail to address the specific socio-economic conditions in the region and differences between regions.

5. Susceptibility to political change

Because the making of current regional development policies typically involves no consensus building process, it is often susceptible to political change. For example, the takeover of new DPP administrations in Pingtung County, Taichung County and Kaohsiung City has produced dramatic policy changes regarding specific projects. In Pingtung, the DPP County Magistrate, unlike the previous KMT administration, has opposed the construction of a major dam and the proposed 8th Naphtha Cracker Complex. In Taichung County, the DPP County Magistrate was elected on the platform of opposing the construction of the Bayer chemical plant and subsequently proceeded to hold a local referendum that eventually forced Bayer to withdraw the plan. In Kaohsiung City, the newly elected DPP Mayor recently joined the neighboring DPP county administrations in opposing the proposed Meinung Dam, reversing the policy of the previous KMT

administrations. Similarly, a reversal in policy can also be expected if KMT returns to power in those counties. The result is continued uncertainty and volatility in regional development policy.

6. *Lack of Environmental Linkages*

Development patterns have profound impacts on the environment. Regional development, by focusing on the features of specific places, has the potential to link economic development and environmental planning. In the literature of regional and environmental planning, such linkages can be achieved by recognizing environmental boundaries such as watersheds and limitations, such as water supply, topography, or flood zones. However, current regional development strategies in Taiwan generally fail to incorporate environmental concerns, and therefore are seriously flawed. This omission can be characterized by a lack of integrated vision, lack of recognition for natural system boundaries and limitations, lack of consideration for environmental and social costs, and a lack of recognition of the value of unique regional resources.

On both the conceptual and policy level, the majority of current strategies lack considerations for environmental factors and an integrated vision of development. No environmental issues are addressed in the current approaches with the exception of *sustainable alternatives*. *Spill-over development* by taking advantage of seemingly abundant land resources without concern for land use planning and transportation could result in urban sprawl and a waste of land resources in the regions. Under the patterns of *smoke stack chasing* and *mixed no-match*, heavy industry will be competing with other sectors of the regional economy for available environmental resources. These current approaches are economically driven in a narrow sense, without specific goals or measures for improving quality of life or environment in the regions. At the planning level, specific development projects under these current strategies often defy natural system boundaries. Heavy industries are located in areas where there are already water shortage problems requiring massive inter-basin water transfers (Cheng 1994). Projects that require building of additional dams and related infrastructure in particular with government subsidies produce high economic, environmental and social costs. Yet these costs have often not been fully taken into account. The present EIA review process focuses primarily on environmental parameters, and generally fails to effectively incorporate the socio-economic cost of development. The project-based approach of the EIA system also fails to address the cumulative impact of developments and their costs.

With the exception of *sustainable alternatives*, current strategies fail to recognize the unique environmental resources and amenities in the regions as assets for economic development. For example, coastal

lands with tourist development potential and ecological and economic importance for the fishery industry have been viewed as inexpensive and disposable land for industrial development. The economic development potentials of those areas and their roles in the rapidly industrializing regions have not been fully recognized. Continued development without concern for environmental limitations will likely result in increasing environmental and social costs to the region. The lack of economic-environmental linkages can undermine future economic development and the overall environmental well being of the regions.

Conclusion—From Dual Disparity to Dual Squeeze

This paper surveys the different regional development strategies emerging in Taiwan in its current political, institutional, and socio-economic context. It then provides an analysis of the different patterns of strategies and an assessment of their institutional problems, environmental linkages, and implications. While regional development efforts can be effective in encouraging economic growth in less urbanized regions, this has not been the case in Taiwan despite the persistence of regional imbalances and pressures for restructuring. This study finds that despite the increased attention given to regional development in Taiwan, most regions—namely counties and cities—still lack coherent regional development policies and strategies. Current strategies are predominantly products of the state-centered institutions and political interests that do not address economic development problems in the regions in any integrated way. The failure to recognize regional-level environmental, economic, and social concerns may further drain the limited resources endangering the future well being of these regions. The interlocking relationship between current institutional problems and the lack of environmental linkages may further entrench the disadvantaged regions in pursuing environmentally costly strategies for development. The result may be further reinforced regional differences.

Coupled with existing state-centered development, most new regional development strategies are in fact creating a dual squeeze on less developed regions. At the institutional level, the regions lagging behind in economic development now face pressure from both state-led policies and a lack of resources and authority at the regional level. In the political dimension, regional development is increasingly becoming the arena of the local factions manipulating their political-economic ties with the state and party apparatus on one hand, and the Central Government and the ruling party eager to find political support at the local level in the increasing competitive multi-party system on the other hand. In conclusion, the regions of Taiwan are experiencing a dual squeeze from the state-led policies and the national-local politics.

In terms of recommendations, major institutional changes, such as a restructuring of the power relationships through the delegation of greater development responsibilities to the local governments by the central governments, are needed to enable effective planning and implementation at the local and regional level. In the end, it is highly likely that the economy of Taiwan as a whole will continue to grow even without integrated regional development and planning strategies. However, if the problems inherent in current regional development patterns are not addressed, this short-term prosperity will only come at a high cost to the regions' future social, environmental and economic well being.

Endnotes

¹ Average income figures have not been adjusted for regional cost of living.

² Exchange rate: 1 US\$ = 30.776 NT\$ (TWD) (January 10, 2000)

³ This example is elaborated in the next section on Patterns of Current Regional Development Strategies.

References

- Agence France-Presse (AFP). 1999. "Taiwan Proposes Package to Boost Economy" *China Times*. January 7.
- Central News Agency. 1998. "Government Urged to Remain Cautious in Deregulating Farm Land Trade" *China Times*. November 21.
- Cheng, Ching-Long. 1994. "Industrial Water Consumption and Protection of Water Resource in Taiwan" in *Environmental Protection and Industry Policy*. Taipei: Chien Wei Press (in Chinese).
- Commerce Times*. 1998. "Six Criteria in the Consideration of the Third Science-based Industrial Park" August 12 (in Chinese).
- Construction and Planning Administration (CPA), Ministry of the Interior. 2000. "Introduction to the Agency's Work" <http://www.capmi.gov.tw/~unalis/duties/des-dep.htm> (in Chinese).
- Council of Agriculture (COA). 1998. "Farm Land Release Proposal" http://www.idic.gov.tw/bin/q_ctsup3?serno=1 (in Chinese).
- Council of Economic Planning and Development. 1998a. "Eastern Regional Economic Development Plan" <http://cepd.spring.org.tw/Mission/East-develop/3.htm> (in Chinese).
- . 1998b. "Implementing Livelihood Circle Construction" <http://cepd.spring.org.tw/Intro/Org/urba/4.html> (in Chinese).
- . 1998c. "Policy Framework of 1990s" http://cepd.spring.org.tw/Mission/taiwan_point/80policy.html (in Chinese).
- Directorate General of Budget Accounting and Statistic Executive Yuan (DGBASEY). 1998a. "Gross Domestic Product by Sectors" <http://www.dgbasey.gov.tw/dgbas03/bs4/nis/t35.htm> (in Chinese).
- . 1998b. "National Census Information" <http://www.dgbasey.gov.tw/census~n/six/lue5/census01.htm> (in Chinese).
- . 1998c. "1998 Industry Census Preliminary Report News Release" <http://www.dgbasey.gov.tw/census~n/two/ht423/HT4234.HTM> (in Chinese).
- The Economist*. 1998. "Taiwan: In Praise of Paranoia" November 7.
- Executive Yuan National Science Council (EYNCS). 1997. *White Paper on Science and Technology: Vision for the Development of Science and Technology in 21st Century Taiwan*.
- Global Views Monthly*. 1998. "1998 Survey of Counties and Cities. November" (in Chinese).
- Ilan County Government. 1997. *Ilan County Comprehensive Planning—Summary* (in Chinese).

- Jacobs, Jane. 1984. *Cities and the Wealth of Nations*. New York: Random House.
- Kondolf, G. Mathias and Jeffrey Hou. 1998. *Review of the Environmental Impact Assessment for the proposed Binnan Industrial Complex, Tsengwen Coastal Plain, Taiwan*. Center for Environmental Design Research Working Paper No. 98-00, University of California at Berkeley.
- Leu, Ching-Song. 1997. *The Debate of Science Park Impact on Local Development and Taiwan's Evidence: A Case Study of the Science Base Industrial Park in Shin Chu*. Master Thesis. Graduate Institute of Urban Planning, National Chung-Hsin University (in Chinese).
- Ministry of Economic Affairs (MOEA). 1998a. "Current Status of Economic Development" http://www.moea.gov.tw/^meco/Intro_e/xmoe1.htm.
- . 1998b. "Current Status of the ROC's Economic Development and Achievement" http://www.moea.gov.tw/^meco/Intro_e/xmoe11.htm
- . 1998c. "Economic/Trade Policies" http://www.moea.gov.tw/^meco/Intro_e/xmoe22.htm (in Chinese).
- Sun, Chong-Yi. 1988. "Regional Spatial Policy in Taiwan" *Taiwan: A Radical Quarterly in Social Studies*. 3(2, 3): 33-96. Taiwan. (in Chinese).
- Taoyuan County Government. 1998. *Great Taoyuan Development Plan*. <http://www.tyhg.gov.tw/peach/intro/ACER.htm> (in Chinese).