

INTRODUCING THE URBAN LAND POOLING/ READJUSTMENT TECHNIQUE INTO THAILAND TO IMPROVE URBAN DEVELOPMENT AND LAND SUPPLY

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Most of the growth of Asian cities takes place by their outward expansion through the conversion of their urban-fringe lands from rural to urban uses. This land conversion usually takes place by the separate subdivision of the private land parcels and is usually subject to the problems of land withholding, land shortages, scattered land and building development, backlogs in the provision of public road and public utility works, unused farmland, excessive land speculation and high land prices. The land-pooling/readjustment technique (LP/R) can be used to reduce these problems.

Land pooling/readjustment is a land development technique whereby a group of separate land parcels are assembled for their unified planning, servicing and subdivision as a single estate with the sale of some of the new building plots to recover the costs and the redistribution of the other plots back to the landowners. A local government could undertake LP/R projects for selected urban-fringe areas to subdivide the land for the planned urban land uses and to construct the public roads, public utility works and parks at no cost to government. The LP/R technique is widely used in Japan, South Korea and Taiwan and is used in some cities in Australia and Canada. It has also been adopted in Indonesia and Nepal where a number of LP/R projects have been carried out (2). This experience raises the question of the prospect for LP/R in Thailand. The present paper discusses the potential benefits of adopting the technique in Thailand and outlines the way in which it might be introduced, and notes the conditions that should be met to achieve the benefits of LP/R.

The LP/R technique has different names in different countries, being known as land readjustment in Japan and South Korea, land consolidation in Taiwan and Indonesia, land pooling in Australia and Nepal, and land replotting in Canada. These different names reflect different parts of the LP/R process. Although there is an important legal difference between land pooling and land readjustment they are essentially the same and the present writer finds it useful to use the words pooling and readjustment together to indicate this similarity and to give the technique a name that is self-explanatory.

Nature of LP/R

LP/R can be defined as a technique by which a group of adjoining land parcels are consolidated for their unified design, servicing and subdivision with the sale of some of the building plots for cost recovery and the redistribution of the other plots to the landowners. A definition from another perspective is that LP/R is a land management technique whereby a group of neighbouring landowners in an urban-fringe area are combined in a compulsory

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partnership for the unified planning, servicing and subdivision of their land with the project costs and revenues being shared between the landowners. It is a simple concept and this is illustrated by the diagram in Chart No. 1 which shows a typical LP/R project to produce serviced building plots.

LP/R projects are usually undertaken by local governments, but are also often undertaken by central government bodies such as the highways department. In a typical project, the LP/R agency selects the area to be developed and identifies the land parcels (and owners) to be included. A draft LP/R scheme is then prepared to plan and define the project, and to demonstrate its viability and feasibility. The scheme therefore includes a map of the original land parcels; a schedule of the land owners, parcels and valuations; plans of the proposed subdivision layout and network infrastructure; a schedule of plot valuations; a plot reallocation plan; an implementation programme; and cost estimates and a financial plan. It also includes a written statement of the project objectives and principles, and the implementation measures. The scheme is prepared in consultation with the landowners and the government road and public utility agencies that will be involved in its implementation. It is prepared as a draft scheme and then presented for majority landowner approval and placed on public exhibition. After any necessary amendment it is submitted for central government approval. The approved final scheme then authorises and regulates the implementation of the LP/R project.

The LP/R agency then arranges a loan to finance the implementation activities and works. It designs the engineering works and engages contractors to construct them. The land is surveyed and subdivided into streets, open spaces and building plots with the issue of title documents. The streets and open spaces are transferred (dedicated) to the local government. Some of the building plots are sold in order to recover the project costs and repay the loan. The remaining plots are transferred to the landowners in proportion to their share in the project. The landowners can then sell or build on (or simply hold on to) their new plots.

LP/R is a simple concept but its successful application requires that each LP/R project be properly prepared and efficiently implemented. The proper preparation begins with the selection of suitable site. The LP/R project preparation and implementation process is summarised in Chart No. 2.

Key Features

It is useful to note some of the key features of the LP/R technique, as follows.....

Central government law and administration: There is need for a central government law to specify the approved LP/R agencies, to set out the proper procedures, and to authorise and regulate the preparation and implementation of LP/R projects in accordance with the stated principles and procedures. This law is administered by a central government body to oversight the working and improvement of the system, and to review and approve each LP/R scheme for implementation.

Approved LP/R agencies: Although most projects are undertaken by local governments, other government authorities such as highways departments, urban planning and development authorities, and housing authorities are also authorised to undertake LP/R projects for purposes related to their functions. Groups of landowners might also be authorised to undertake projects for their land on a cooperative basis.

Majority landowner support plus compulsory participation: Majority landowner support

Chart No. 1
A COMPLETE LAND POOLING/READJUSTMENT PROJECT
TO PRODUCE SERVICED BUILDING PLOTS

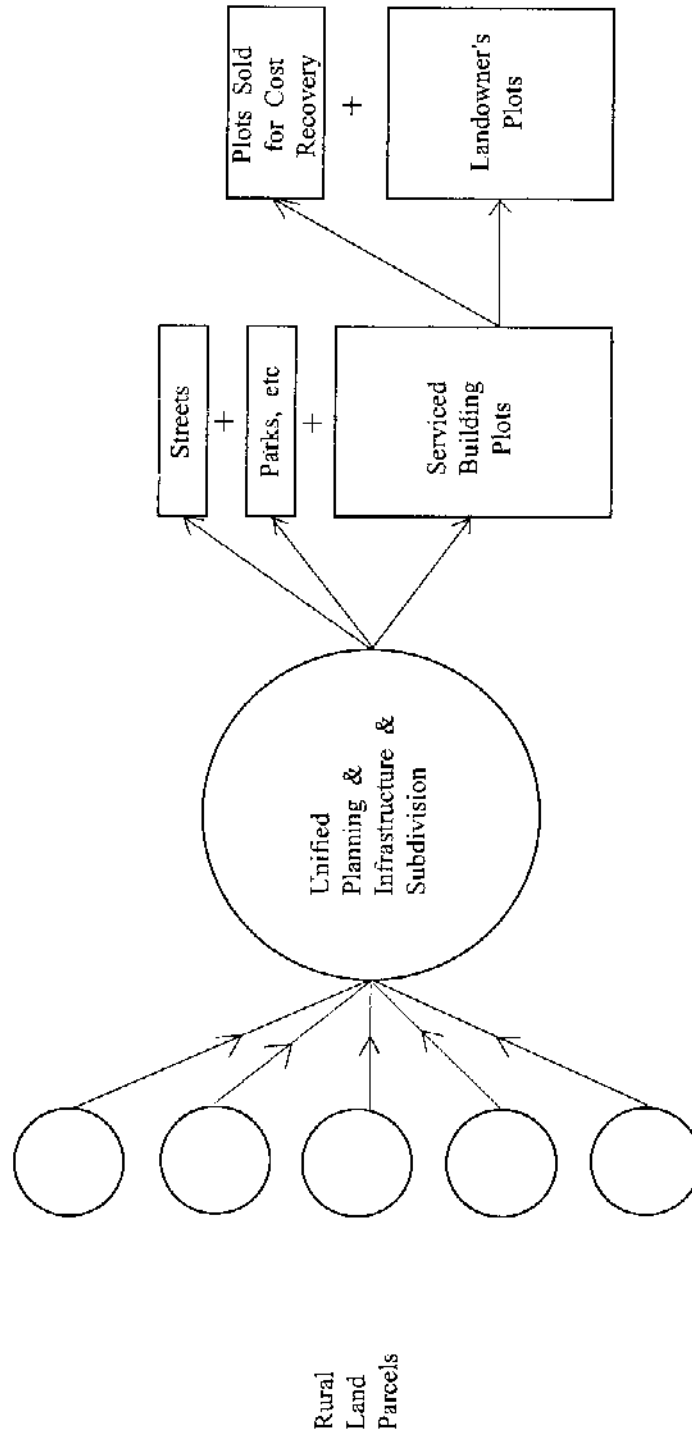
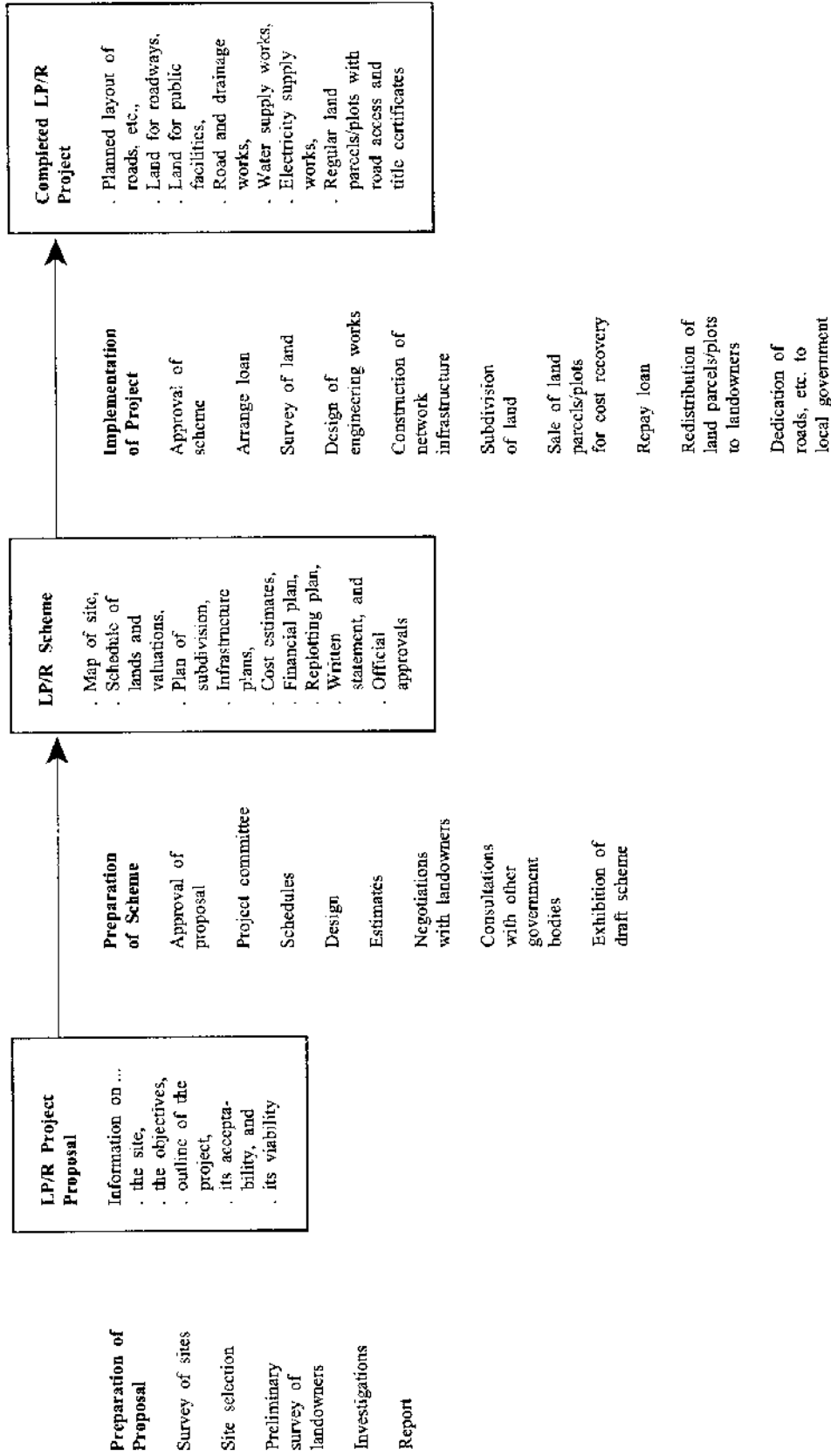


Chart No. 2
A STANDARDISED PROCESS FOR PREPARING AND IMPLEMENTING
LAND POOLING/READJUSTMENT PROJECTS



for each proposed LP/R project is a key requirement for successful application of the technique. Although the emphasis is on landowner acceptance and support for the proposed project, the agency also has to be able (and willing) to use the government power of compulsory purchase against any minority of holdout landowners in the designated project area.

LP/R Schemes: The preparation of every project should be by the preparation and publication of a scheme for the project, comprising plans, schedules, programmes, assessments and a written statement. The scheme designs, explains and justifies the proposed project to the LP/R agency, to the landowners, to the central government and to the loan agency. When approved, the scheme authorises and guides the agency in implementing the project. Each LP/R project is, in effect, a partnership of the landowners for the unified servicing and subdivision of their land, and the LP/R scheme can be seen as their partnership agreement.

Land Pooling and Land Readjustment: There is an important legal difference between land pooling (LP) and land readjustment (LR) in the matter of land ownership. In a LP project the land is legally consolidated by the transfer of the ownership of the separate land parcels to the LP agency with the later transfer of ownership of the new building plots to the landowners. In a LR project the land parcels are only notionally consolidated with the LR agency having the right to design, service and subdivide them on a unified basis and then at the end of the project the landowners exchange their land parcels for specified building plots.

LP/R Projects for Partial Land Subdivision: Although most LP/R projects subdivide the land into the final layout of streets, open spaces and serviced building plots, some are undertaken as partial LP/R projects to subdivide the land into parcels of subdivision land, each with a public road frontage and public utility connections. These reshaped parcels are ready for further servicing and subdivision into streets, open space and building plots by the landowners or developers, as and when they decide to do so. A partial LP/R project to convert rural land into subdivision land is illustrated by the diagram in Chart No. 3. The LP/R agency might implement such a project for a large land area encompassing relatively large land parcels where the sale and building development of the final plots would be spread over many years. It provides an economical way of installing key network infrastructure in urban-fringe areas at an early date so as to guide the long-term development of the land.

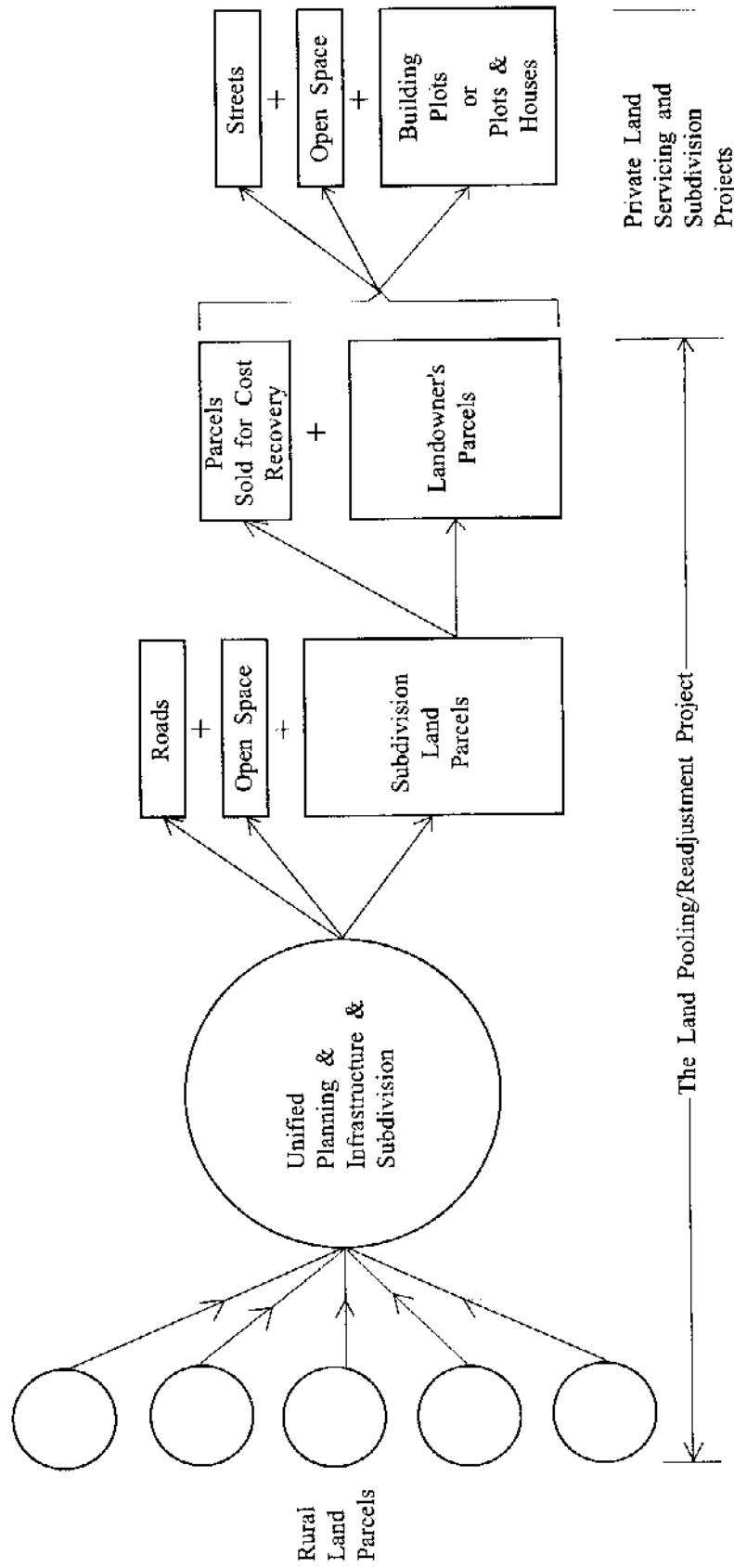
LP/R is a Multi-Purpose Technique

Part of the importance of the LP/R technique is due to the fact that it is a multi-purpose technique of urban land development. It is a technique for ...

- land assembly for unified development;
- government land acquisition for public roads and facilities at no cost to government;
- constructing network infrastructure at no cost to government;
- implementing the officially planned urban land uses;
- sharing the costs and benefits of land development equitably between the landowners;
- achieving timely land development; and
- overcoming development blockages such as the need for special infrastructure works

Local governments usually undertake LP/R projects in order to implement their urban development and land use plans and to provide the on-site network infrastructure at no cost

Chart No. 3
A PARTIAL LAND POOLING/READJUSTMENT PROJECT
TO PRODUCE PARCELS OF SUBDIVISION LAND



to the taxpayer, particularly in situations where the private land developers cannot assemble the land and/or provide the required infrastructure works. They can also be undertaken to implement public road projects and other public works, and to bring the surrounding land into urban development and use. They can also be undertaken for public housing projects.

The practical importance of LP/R also lies in the fact that it is a technique for improving land development in mixed-economy countries that is politically feasible, financially feasible and administratively feasible. It is politically feasible because it is acceptable to most landowners who usually support LP/R projects because they share in the land value gains from urban development. This majority landowner support encourages the politicians to overrule the opposition from any minority of holdout landowners who oppose the proposed LP/R project. LP/R is financially feasible because the land does not have to be purchased and the cost of the infrastructure works and subdivision can be financed with a short-term loan and then quickly recovered by the sale of some of the new building plots. It is administratively feasible because it can be learned by beginning with simple projects.

Potential Benefits of LP/R in Thailand

The discussion above of LP/R as a multi-purpose technique listed a number of the potential benefits for government of using the technique. All of these potential benefits are applicable in Thailand because Bangkok and many of the provincial cities and towns of Thailand have urban-fringe development problems. They can be considered in turn.

Land Assembly: The urban-fringe lands are usually divided into many small parcels of farm land without road connection and they need to be assembled to provide economic sites for development projects. But this assembly and consolidation is difficult and costly for private developers to do and they usually have to bypass suitable land, resulting in a scattered pattern of land and building development and unused land.

Government Land Acquisition: As government bodies are short of funds for their public works and are often reluctant to use their compulsory acquisition power, they frequently do not acquire the land needed for public roads and public facilities, and sometimes acquire land at poor locations for their projects because it is the affordable land.

Provision of Network Infrastructure: As government bodies are short of funds for their works, there is usually inadequate government provision and there are backlogs of needed public roads and water supply and drainage lines in new suburban areas. In Bangkok, the new suburban areas are being developed without the forward reservation or construction of the sub-arterial and distributor roads, so that the suburban road system emerges out of the separate land subdivision projects as a chaotic maze of roads and streets. LP/R projects could be used to construct a network of sub-arterial and distributor roads that would "open-up" the urban-fringe areas for urban development and provide a physical framework to guide this development (3) (4).

Plan Implementation: As the government is generally not willing to implement the official land use plans by zoning regulations that restrict private development rights, there is little effective plan implementation. The partnership nature of LP/R projects with landowner sharing of the project profits avoids the possible negative effects of restrictive zoning regulations.

Equitable Sharing of Costs and Benefits: The costs and benefits of urban land development are distributed very unevenly between the landowners and between the landowners, developers and government, depending on various factors such as each participant's bargaining power, the timing of development, government land acquisition and the location of public works. Most of the rising land value generated by urban expansion are received by the urban-fringe landowners as "unearned increments" with no landowner contribution to the cost of the public works that support the rising land values. This "something for nothing" feature of urban-fringe land values generates excessive land speculation that reduces the supply of subdivision land, increases land prices, and increases the scatter of development and its costs.

Timely Land Development: The land withholding by the urban-fringe landowners is worsened by the widespread land speculation activity that increases the land shortages and scatter of development and increases land prices. This excessive land speculation can be countered by implementing LP/R projects for the unused lands that are physically and economically "ripe" for urban development.

Development Blockages: In the case of Bangkok, the development of suburban land is often blocked by canals which require the construction of a costly bridge to provide vehicular access to the land but it is usually uneconomic for individual landowners to do so.

It is also necessary to note the additional problem of ribbon development along the new public main roads, particularly by shophouse building development. These buildings frequently block access to the rear land parcels and prevent development in-depth while the shophouses and other commercial buildings on the main roads generate considerable local traffic that conflicts with the through-traffic.

The LP/R technique could be used to solve or reduce these land development problems in Bangkok and other Thai cities and towns. However, these potential benefits are mainly public benefits for the government and the community, and there is also need to consider the potential private benefits. The technique can directly benefit the urban-fringe landowners in Thailand and therefore gain majority landowner support.

Potential Landowner Support for LP/R in Thailand

Although the difficulties of land assembly in urban-fringe areas are due to the withholding of land from sale by the landowners (a mixture of farmers, developers, land speculators and investors), many of these landowners could be induced to participate in LP/R projects when there is the possibility of their gaining a significant increase in the market value of their land. This is particularly the case when participation in a LP/R project would provide public road access to their land, thereby converting it from farmland to potential urban land. There are a number of land development situations in Thai cities and towns where LP/R could be used to give the landowners a significant net gain in land value, as well as to generally improve land development, and therefore gain the support of the landowners.

As the urban development potential of urban-fringe land, and hence its market value, depends on its connection to the urban road network, the construction of a new public road will considerably increase the market value of the land parcels that it cuts through. This new access and land value increase could be extended in-depth to the adjoining rear land parcels on both sides of the road by bringing these land parcels into development through

a LP/R project. All the landowners would benefit from the road and LP/R project and would therefore be potential supporters of the project. In this situation, the public road authority could undertake or initiate LP/R projects in conjunction with its road construction works so as to achieve development in-depth instead of ribbon development, and to recover part/all of the cost of the land acquisition and road works (4). When the road authority has to choose between alternative public road projects it could survey the landowners in each proposed road area and take the potential landowner support and cooperation for LP/R into consideration when deciding which road to construct.

A second possible application of LP/R to benefit landowners as well as to improve urban development would be LP/R projects undertaken to finance the provision of special infrastructure works, such as bridges, that are required for some land subdivision projects. The canals of Bangkok prevent the urban development of many land parcels by blocking their road access. Canal bridges are costly to construct and a single landowner or small group of adjoining landowners usually cannot afford to pay for a bridge, so that few vehicular bridges are constructed. In this situation it would be possible to formulate a LP/R project to construct the bridge and to service and subdivide all the land that would benefit from the bridge and could therefore share the cost of the bridge. The landowners who could see a significant net increase in the value of their land after meeting their share of the project costs, including the bridge, would be likely to support the project. Other types of special infrastructure that might be required for the subdivision of particular areas are drainage works for swampy areas and off-site connecting public roads and utility pipelines.

A third type of LP/R project to benefit landowners would also overcome a barrier to public road access. There are many situations where land parcels are separated from an existing public road by other land parcels that a single landowner cannot afford to purchase or cannot negotiate the purchase of a portion of the land, in order to construct a connecting road. In this situation, a government body such as the National Housing Authority could purchase the land parcels with the road frontage and then formulate a LP/R proposal for combining this land with the land parcels behind it for their unified servicing and subdivision. As this LP/R project would provide road access and land value increases for the rear land, all the owners would be potential supporters of LP/R. The National Housing Authority could benefit by the increased production of housing plots, including plots for low-cost housing, and possibly by way of a better designed housing estate, and economics of scale in development.

Adoption of LP/R in Thailand

There is awareness among government officials in urban development agencies of the use of the LP/R technique overseas and its potential benefits, and the desirability of adopting it in Thailand. Many officials are aware of its potential for "opening up" land for urban development by providing public road access to the rear land parcels that are referred to locally as "blind land". This awareness of LP/R is partly due to the information dissemination by the Department of Town and Country Planning, which is interested in it primarily as a technique for plan implementation. As well as its dissemination and promotion work the Department has carried out, with technical assistance from the Japan International Cooperation Agency, a case study on the possible use of LP/R for the planned development of the new town proposed for Laem Chabang as part of the Eastern Seaboard Development

Project (5). However, this would be major venture and it would be more appropriate to introduce LP/R into Thailand by first mounting some simple and modest pilot LP/R projects so as to demonstrate and learn the technique under local conditions. The Department is considering mounting such pilot/demonstration projects.

It would be possible to use the *Town Planning Act, 1975* to authorise LP/R projects. The scheme for each proposed LP/R project could be prepared and approved as a specific plan under the provisions of Chapters 5 and 6 of the Act that cover the preparation and implementation of specific plans (6). However, as the implementation of each specific plan has to be authorised by Parliament it is not a practical mechanism for authorising LP/R projects. Although specific plans with zoning regulations, etc., were to be the main means of implementing the general (comprehensive) town plans prepared under the Act, no specific plans have yet been approved for implementation. Although specific plans for LP/R projects would be quite different from specific plans with zoning regulations, etc. and should be more acceptable, it appears that the Department of Town and Country Planning does not wish to become directly involved in the land development activity that is part of each LP/R project.

An alternative possible approach for adopting LP/R would be by cooperative joint action by a public road authority and the National Housing Authority. Each scheme could be for a partial LP/R project (as illustrated in Chart No. 3) and be designed to install a grid (or part of a grid) of distributor roads in an urban-fringe area so as to " open it up " for urban development and to provide a physical framework to guide the separate subdivision of the reshaped land parcels in the area. The public road authority would implement the road works in each project while the National Housing Authority would implement the land development component and receive a share of the net increase in the project land values after cost recovery, taking this share as land to be used for public housing. Most of the landowners whose " blind land " will be opened-up for urban development and increased in value would agree to join and support such projects, while those landowners who did not wish to join could be bought out by negotiated purchase or, if necessary, by proposing compulsory purchase. T.S. Foo has prepared a draft scheme for a road-based LP/R project for a 329 hectare area near Minburi that demonstrates this approach (4).

Although the existing law could be used for the adoption of LP/R in Thailand it would be preferable to pass a new law (and regulations) to authorise and regulate the preparation and implementation of LP/R projects by various government agencies for a range of purposes. However, the drafting of the law and regulations should be delayed until some local experience has been gained with the technique and an appropriate procedure decided for preparing and implementing LP/R projects in the light of this experience. The initial experience could be gained by organising some pilot/demonstration LP/R projects. This approach is preferable to copying the law and regulations from another country.

It is also necessary to recognise that the adoption of LP/R in Thailand will involve more than passing a LP/R law and undertaking LP/R projects. The law and regulations will need to be supported by a central government administration to guide, assist and oversight the activities of the various LP/R agencies, and it is desirable to envisage the development of a national LP/R system over a period of years. The various steps and stages for developing such a system are listed in Chart No. 4.

One early step in developing this national LP/R system would be a review of the experience with rural land consolidation in Thailand, as there are links and similarities between the two techniques. In European countries the development of urban LP/R was based on their experience with rural land consolidation, and this was partly the case in Japan. In Thai-

Chart No. 4**DEVELOPING A NATIONAL LAND POOLING/READJUSTMENT (LP/R) SYSTEM**

- 1) Preparation and implementation of pilot LP/R projects to demonstrate the technique and provide experience in the local context.
- 2) Design and adoption of a standardised procedure for the preparation and implementation of LP/R projects.
- 3) Designation of a central government agency as a central LP/R unit to guide, assist and oversee the wide use of LP/R technique.
- 4) Formation of an interdepartmental steering committee to guide the development of the LP/R system and to promote interdepartmental cooperation in the operation of the system.
- 5) Drafting a LP/R law and regulations to guide, authorise and regulate the preparation and implementation of LP/R projects for a range of purposes.
- 6) Setting up funding arrangements to provide credit finance for the preparation and implementation of approved LP/R projects on a cost recovery basis.
- 7) Authorisation of appropriate government organizations as LP/R agencies to prepare and implement LP/R projects.
- 8) Presentation of training programs for LP/R agency staff and the staff of other bodies involved in LP/R projects.
- 9) Promotion of landowner awareness and knowledge of the principles and uses of LP/R.
- 10) Promotion of a range of LP/R projects, covering various LP/R agencies and different urban development situations throughout the country.
- 11) Monitoring of LP/R projects with research and review of LP/R experience.
- 12) Improvement and development of LP/R system.

land, the existing law for rural land consolidation could not be used to authorise LP/R but the land consolidation system provides experience, lessons and precedents that could be helpful in developing an urban LP/R system.

Rural land consolidation is undertaken in Thailand for the construction of the canal-to-farm water distribution works in irrigation projects together with the preparation of the farm lands for irrigated farming. It is authorised and regulated by the *Agricultural Land Consolidation Act, 1974* and the projects are prepared and implemented by the provincial offices of the Central Land Consolidation Office, under their provincial land consolidation committees. A scheme is prepared for each project to show the proposed ditches, drains and roads and the reshaped farms together with cost estimates, and it is finalised in consultation with the farmers in the project area. Although the procedure for preparing and implementing the projects is generally similar to the procedure for urban LP/R projects, there are important differences. For example, the project cost recovery is by financial charges on each farmer rather than by the retention and sale of part of the project land. As well as such procedural differences, the law stipulates that the project land be kept in agricultural use and that it can not be sold or transferred for five years after the completion of the project.

Introduction of LP/R in Thailand

The next substantive step for the adoption of LP/R will be the mounting of a few pilot LP/R projects so as to demonstrate the technique and provide experience with its application in the Thailand context. As pilot projects, they should be relatively small and simple so that they can be carried out easily and quickly. As demonstration projects, they should be located in the Bangkok area in view of its central location, but at least one could be located in a provincial city, particularly if a local government is keen to adopt the technique.

The pilot projects should be implemented by interested government agencies rather than by the landowners. Although it should be possible to find groups of neighbouring landowners who would agree to join landowner cooperative LP/R projects, this approach would not provide a generally replicable model and would therefore have limited value. The government agencies carrying out the projects should be directly involved in urban development and be potential users of LP/R and interested in adopting the technique. These agencies could include the National Housing Authority, the Highways Department and the Bangkok Metropolitan Administration, particularly its Department of Public Works which is responsible for most of the public road construction in Bangkok. Some local governments in provincial cities could also be interested in adopting the technique.

The Department of Town and Country Planning should liaise with the government agencies implementing the pilot LP/R projects so as to monitor and record their progress and draw out the lessons that they provide. It would be desirable for the Department to do this in association with an interdepartmental committee of representatives of the interested agencies, including the Department of Lands and the Office of the National Economic and Social Development Board.

The pilot LP/R projects will have to be successful so as to properly demonstrate the technique. That is, they will need to convert the rural land into a planned layout of streets, open spaces and serviced building plots, making this conversion efficiently and expeditiously, with full cost recovery, and giving all the landowners a significant land value gain. Achieving these successful projects will largely depend on proper regard for four interrelated

factors, these being skilful project management, proper project preparation, landowner understanding and support, and sound site selection. These four factors can be seen as conditions for successful LP/R projects, and are considered in turn.

Each LP/R project should be prepared and implemented as a discrete project by a competent project manager who is experienced in preparing and implementing urban development projects. This manager would be designated/appointed by the implementing agency and would have professional responsibility for managing the preparation and implementation of the project and achieving the project objectives. He/she would need to be allocated the necessary resources, particularly adequate credit finance.

The proper project preparation is mainly ensured by the preparation, in consultation with the landowners, of a complete scheme for each project. This LP/R scheme has to define and explain the project and demonstrate its feasibility and viability to the implementing agency, the landowners and the credit finance agency. It has to show each landowner how he/she will be affected by the project. The final agreed scheme guides and regulates the implementation of the project. The components of a complete LP/R scheme are listed in Chart No. 5.

The landowner support for each proposed LP/R project will be mainly motivated by the benefits they expect to obtain, particularly the estimated net increase in the market value of their land and this will be shown in the scheme. However, they will need to understand the proposed project, what will be required of them and what risk is involved. Their understanding and confidence can be promoted by information flow and consultations during the preparation of the scheme, beginning with the selection of the project site. These consultations can ensure that the scheme takes account of the landowner's concerns and objections, and that the landowners understand the scheme and are persuaded that the project will be beneficial and equitable to them.

The selection of suitable project sites is the fourth key requirement for mounting successful LP/R projects. Each site has to be physically suitable, economically suitable and "psychologically" suitable for urban development through LP/R. To be physically suitable each group of land parcels proposed for LP/R will need to have a public road connection and connections to the utility service supply lines. To be economically suitable, the market demand for building plots at the location has to be high enough to support the profitable subdivision of the land into serviced building plots. To be a "psychologically" suitable site the landowners would have to be receptive to the proposed subdivision and development of their land and not committed to keeping it in rural use. Their attitudes should be assessed by a reconnaissance survey of their land use objectives and intentions.

There are many suburban and urban-fringe areas of Bangkok that meet these location criteria and can provide suitable sites for mounting successful pilot LP/R projects. The earlier discussion of the potential landowner support for LP/R in Thailand indicated that all the owners of "blind land" are probable supporters of a LP/R project that will open-up their land for urban development, so that the pilot LP/R projects could be located in such areas. This land could be identified by inspection of cadastral maps alongside road maps and aerial photos of suburban and urban-fringe areas. The "blind land" so identified could then be investigated by field survey so as to ascertain the ownership of the land and to estimate its likely increase in market value when converted from farm land to subdivision land or building plots. Those areas showing the largest increase in value by being opened-up for urban development would be the most promising sites for mounting successful LP/R projects.

Chart No. 5

CONTENTS OF A LAND POOLING/READJUSTMENT (L.P/R) SCHEME

(To define, explain and justify the proposed L.P/R project and when approved, to then guide/regulate the implementation of the project.)

- 0 Map of the LP/R project area showing the land parcels
- 0 Schedule (list) of the land parcels, with information for each parcel on: the land dimensions, any building, etc. improvements, the landowner (s), the owner's land interest, any other interests in the land, and the land valuation
- 0 The subdivision layout plan
- 0 The network infrastructure plans
- 0 The implementation program
- 0 Cost estimates
- 0 Plot valuations
- 0 The financial plan (cash flow analysis)
- 0 The replotting plan
- 0 The plot allocation schedule
- 0 A written statement of the project objectives, the sharing arrangements, and the implementation arrangements. (It is a de facto partnership agreement for the project).

Notes and References

(1) This paper forms part of the author's continuing study of the land pooling/readjustment technique for managing and financing urban land development in Asia-Pacific Region countries. Also see ...

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(2) For a discussion of LP/R in Indonesia see ... Sjahrul Ibrahim, *Land Pooling/Readjustment for Urban Development in Bandung: A Case Study of Babakan Surabaya Project*, Masters degree dissertation, (Human Settlements Division, Asian Institute of Technology, Bangkok, 1987); and R.W. Archer, *Land Consolidation for Urban Development in Indonesia*, HSD Research Report No. 11, (Asian Institute of Technology, Bangkok, 1986, pp. 45).

For a discussion of LP/R in Nepal see ... B.P. Acharya, *Urban Land Pooling in Nepal; Three Land Pooling Projects in Pokhara*, HSD Research Report No. 21, (Asian Institute of Technology, Bangkok, 1988, pp. 67).

(3) See R.W. Archer, "The Possible Use of Land Pooling/Readjustment for the Planned Development of Bangkok", *op cit.*, (pp. 247 - 250).

(4) T.S. Foo, a doctoral degree student at the Asian Institute of Technology, has prepared a draft LP/R scheme for a 329 hectare area of 95 land parcels near Minburi on the north-eastern urban-fringe of Bangkok. The proposed partial LP/R project is designed to install a network of distributor roads at no cost to government that will provide a framework to guide the urban development of the land. Also, to convert the land from rural land to subdivision land by the reshaping of every land parcel together with the connection of every land parcel to water supply, electricity supply and drainage lines. See ... Foo Tuan Seik, *A Road-Based Land Pooling/Readjustment Scheme in Minburi District, Bangkok*, A special study report, (Human Settlements Division, Asian Institute of Technology, Bangkok, 1988, pp. 50).

(5) JICA Team, *The Study on Applied Technology for Making City Plans, Second Interim Report, August 1988*, (Department of Town and Country Planning, Bangkok, 1988). See ... “ Section 3-2-2: Land Readjustment Technique ” (pp. 140 - 198).

(6) See ... “ Chapter 5: The Preparation and Making of a Specific Plan ”, and “ Chapter 6: Enforcement of Specific Plan ” in *Town Planning Act, B.E. 2518* (International Translations, Bangkok, pp. 240 - 252).