Conceptual Structure of New Public Management ～Design Methodology of New Public Management and System Maintenance～

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要約：社会システムの分析においては､与えられた社会環境条件において経営目標を達成するために､如何に対象とする事象や人間を扱うか、資源を活用するかが問われる。社会システムは社会環境、対象とする事象や人間、資源、そして経営目標との関係が適切に保たれている限りは機能する。しかし、社会システムと関係する各要素が変化するため、継続的なシステムメインテナンスと明確なマネジメントポリシーが無い限り、社会システムの機能は維持されない。つまり、適切な社会システムの存在だけでは十分ではない。適切な社会システムの創造・維持は、その為のプロセスとルールで構成される適切な経営システムにより達成される。行政経営はこの様な観点で取り扱う必要が有り、工学的な計測・評価との統合により、経営目標を達成する事業方法や計画がアウトプットして得られ、同様に見直されることが出来る。

Abstract： Social systems analysis consists of how to deal with the objectives such as phenomena, persons under certain social circumstances and how to utilize resources to achieve the target of the social systems. Social systems function properly as far as the relations among social circumstances, objectives, resources, and targets are appropriate. But it also has to be realized that these appropriate relations may not be able to be maintained unless the continuous maintenance and organizational and personnel management and clear management policy are performed under the change of factors related to social systems. It is not just enough that we have appropriate social systems. Social systems consist of processes and rules to deal with mutual relations among factors. They also consist of systems of processes and rules to determine the social systems. Thus systems to determine appropriate systems also have to function properly and they have to be confirmed. For the social systems analysis, we have to study on durability of the social systems, and evaluate the mechanism of the social systems from the social science point of view as well as engineering science point of view though New Public

1. Background of New Public Management

In general Management of social capital has to be discussed as a system of New Public Management (NPM), since public service for citizens are mainly provided by social capital of software and hardware which is also the major investment of the government. Appropriate management of social capital has to be derived from the investigation on NPM and social capital which is related with investment and operation.

It is difficult to identify one definition of NPM since researchers and critics have their own definitions. Some definitions have a specific and systematic concept such as an actual process, decision making and evaluation standard for public management target. On the other hand, at Japan and at many other countries definition of NPM varies very much, although necessary functions of NPM can be defined as follows.

1) Enable efficient public management and investment
2) Enable selection of optimal countermeasures for public target
3) Fulfill accountability and process transparency

In order to provide a new concept of NPM for social capital, it is necessary to summarize and evaluate methodology or process of existing what is called "NPM" systems. Public management can be divided to investment/planning work and routine public service work as well as investment planning and public administration.

Planning procedures for investment are to make an appropriate investment plan, to execute a plan, and to improve a plan which themselves are the procedure of the NPM. On the other hand, appropriate public service works are output of the improvement procedure of NPM systems as well as that of investment plan. The traditional management improvement cycle of the private firms which is well known as "Plan Do Check Action" cycle is what deployed at public management for the same improvement purpose. Either for investment plan or for public service works fundamental procedure and activities are the same as shown below.

Social capital or infrastructures from hardware to software are to be planned, to be constructed, and to be operated, to be maintained in a single management system in order to provide public services to citizens for a long term efficiently and steadily. As a result of NPM system, investment plan has to assure future service level and efficient maintenance, and maintenance system has to assure optimized function to maintain service level efficiently. Asset Management System for Social Capital or infrastructures is an actual example of the output of NPM system procedure for efficient management system.

2. New Public Management and Logic Model

In order to construct NPM system for strategic target, theoretical relationship between strategic target and actual countermeasures or services has to be investigated in multiple points of view such as cost and benefit. Theoretically obscure relationships do not provide us accountability for the governmental budget, and it result in that citizens become skeptical to the public management.

Logic Model describes how actual countermeasures and investments are theoretically connected to final strategic target, and it also functions in multiple ways for NPM procedure and policy/strategy evaluation systems.

Program Logic Model introduced at "Logic Model Development Guide" published by W.K. Kellogg Foundation is an example of Logic Model, which is defined as, "Basically, a logic model is

a systematic and a visual way to present and share your understanding of the relationships among the resources you have to operate your program, the activities you plan to do, and changes or results you hope to achieve. ” However it is not designed for actual function and procedure which are essential factors of NPM.

Here, a new definition of “Logic Model” is introduced to define NPM system structure. The Logic Model for NPM which provides Asset Management System of social capital or infrastructures has to function as a theory that explains which budget expenditure, investment or countermeasure is appropriate to fulfill public management target, as an evaluation standard for the selected portfolio of them, as well as a total management structure, and that is why its definition is very important.

[Five New Definitions of Logic Model for NPM]

No1. : Logic Model is a theoretical description of relationship structure among strategic management target as an outcome and performance of investment, services, countermeasure as outputs. It theoretically explains how these outputs relate and contribute to an outcome.

No2. :Logic Model is a management structure itself, since it explains the theoretical relationship and the portfolio of investment, services, and countermeasures which public management has to execute.

No3. :Logic Model is able to be applied for evaluation of the portfolio performance and accomplishment rate of strategic management target, since it dose not only show relationship but also can show that quantitatively.

No4. :Logic Model is a management structure which is designed to function under social circumstances, environmental circumstances, technical circumstances, so that Logic Model can be applied for revision or confirmation tool of management system.

No.5 :The investment, services, countermeasures selected to form output of Logic Model is a portfolio to accomplish strategic management target.

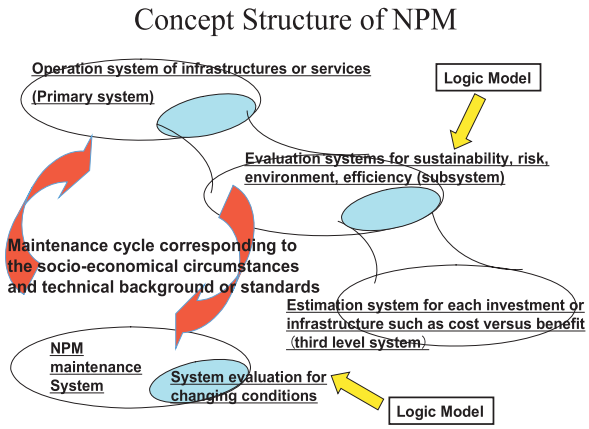

Figure.1 How Logic Model is related to NPM system

3. Logic Model for New Public Management

Public management starts by setting the strategic target either politically or administratively. For example if some local government set a strategic target to vitalize local economy and citizens life as a primary outcomes, they have to be connected to lower outcomes, which also have to be connected to actual investment, services, and countermeasures. If effect and cost of these investment, services, and countermeasures can be measured and evaluated numerically, and if outcomes can be defined by numerical indicator, hole logic model can be defined as a numerical function which enable primary outcomes to be evaluated. Table.1 shows an example how relationships among outcomes and outputs of Logic Model can be defined numerically.

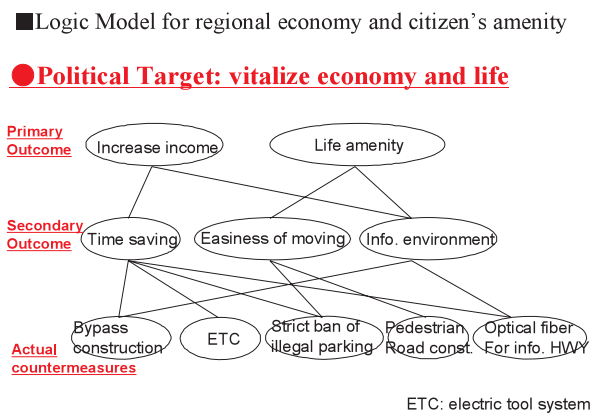

Figure.2 Example of Logic Model

●Target: vitalize economy & life

	What kind of outcome should be selected?	How to measure and evaluate the outcome?	Relationship between primary outcome and secondary outcome. (How to connect them?)
Primary Outcome (Increase Income)	Income per person	Income tax data or questionnaire	
Secondary Outcome(1) ⇒(Time saving)	Total effect of time saving of countermeasures	1)Time saving by reduced traffic congestion 2)Info. environment to save time (questionnaire)	Saving time is estimated as money value. Average time value is based on statistics or questionnaire
Secondary Outcome(2) ⇒(Info. environment)	Efficiency and quality of link to information or better quality job .	Evaluation by questionnaire of actual effect on impact	Research on relationship between efficiency and quality of Info. and impact such as increase of income of efficiency
Countermeasure Evaluation(1)⇒ (Bypass Construction)	Time saving effect	Network simulation for new Bypass construction	
Evaluation(2)⇒ (ban of illegal parking)	Time saving effect by reduced traffic congestion	Social Experiment and impact observation	
Evaluation(3)⇒ (Optical fiber Info. HWY)	1)No.of using Info. HWY 2)Time saving per person	Time saving and efficiency gain by questionnaire	
Evaluation(4)⇒ (ETC system invest.)	Time saving effect by reduced traffic congestion	Social Experiment and impact observation	

Table.1 Example how to make numerical Logic Model

For example primary outcome "income per person" is able to be measured and be evaluated with statistical data, which can be related to Secondary outcome "time saving" by statistical relation function between time and income, or related survey. Secondary outcome "time saving" is able to be integrated with time saving effect of each countermeasure which can be modeled as a numerical function either by measurement of social experiment or by survey.

4. NPM procedure and how to apply Logic Model

The NPM procedure associated with Logic Model is introduced. Once the policy or political vision is set, their appropriateness has to be checked by marketing and by socio-economical survey, with which outcome for policy or vision is structured by setting Logic Model. At the Logic Model broader policy or vision requires multiple layers of intermediate outcomes to reach actual investments, services, and countermeasures. Here, purposes of surveys can be divided to seeds or needs finding, and developing numerical functions of effect and cost evaluation. And numerical function of quantitative indicator has to be developed to evaluate effect and cost of investments, services, and countermeasures. With all these development of Logic Model policy or vision outcomes can be evaluated numerically and government is able to sustain their accountability for necessity of individual investments, services, and countermeasures.

Once logic model is developed, existing social capital, infrastructures, or service systems have to be evaluated whether these are enough or used properly to accomplish primary outcomes as strategic targets without any new spending. This procedure is able to eliminate unnecessary investment and management system. After these procedures possible alternatives have to be developed in case existing social capital, infrastructures or service systems are not enough, with which the portfolio of their effects is evaluated with Logic Model. At the same time Logic Model has to be tested whether theoretical relationship among outcomes and outputs are appropriate with the proposed portfolio.

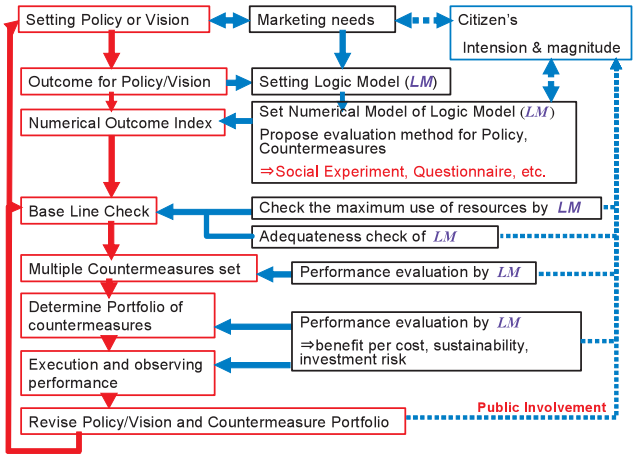

Figure.3 NPM procedure and Logic Model

Effect evaluation of portfolio should not be done just for the selection of outcomes but for the investment or expenditure level of each countermeasure, or even for the methodology of investment or operation. Efficiency of investment as benefit by cost is not just indexes for countermeasure evaluation. They are to be used for integration of total effect and cost to evaluate rate of outcome accomplishment, as well as investment risk and other necessary standards.

The selected portfolio of investments, services, and countermeasures, or their operation methodologies has to be the output of the NPM procedure including development, operation, and maintenance of infrastructures, whose performance has to be evaluated on the procedure of the execution whether the Logic Model has a theoretically and effect-quantitatively appropriate relationship. Evaluation may result in the review of Logic Model and policy or vision. Even though original Logic Model is appropriate, it may become inappropriate under the changing social circumstance, and other circumstances such as culture, economy, environment, and technology. Therefore the New Public Management cycle has to be constantly activated for the review of policy, vision, and outcomes. Through these procedures accountability to citizens is able to be sustained, which is a major purpose of NPM.

5. Policy Logic Model for Social Capital Investment Plan

As already explained, Social Capital Investment Plan is an output of NPM system and Logic Model which consists of theoretically connected layers of outcomes to accomplish strategic target or a primary outcome. Therefore Logic Model itself has a hierarchy of multiple Logic Models.

The most fundamental Logic Model is a "Countermeasure Logic Model" which has a relationship among countermeasure outcome, and output produced by each investment, service, or countermeasure. On the other hand, some intermediate Logic Models connect "Countermeasure Logic Model" to the "Policy Logic Model" which explains the primary outcome of policy or vision.

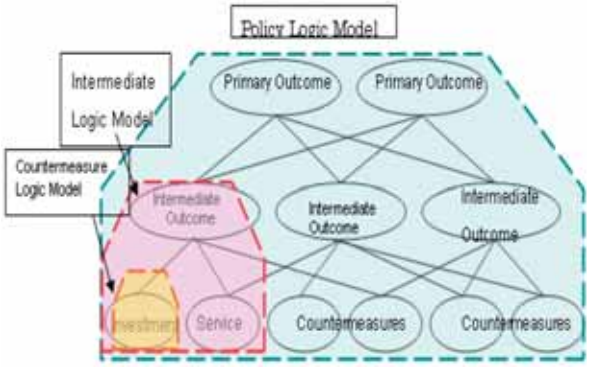

Figure.4 Structure of Policy Logic model

These Logic Models have to be developed at each level of governmental planning. Development plans of infrastructures generally consist of long term, middle term, and short term. In case of infrastructures, Logic Model has to have an identical theory structure of Infrastructures development plan, where outcomes layers of infrastructures generally have to correspond to the planning levels and planning periods.

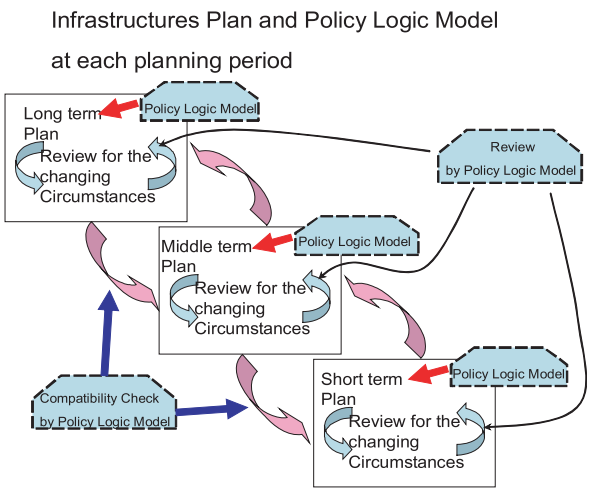

Figure.5 Plan review by Logic Model

Revision of infrastructures development plans though the New Public Management procedure is able to be proceeded by Logic Model. At the first step rate of outcome accomplishment have to be checked and whether it is done by the developed Countermeasure Logic Model. At this stage if the selected countermeasures, investments, and services have to be revised, while compatibility check among short term plan to long term plan has to be executed. At the second step in case Logic Models can not predicted the outcome results, their theoretical and numerical relationship have to be revised. At the third step Logic Models themseives have to be revised including the alternation of outcomes, outputs, countermeasures, and their relationships, which means a total revision of Policy Logic Model.

These revisions of development plan of infrastructures is enabled in more precise manner by the Policy Logic Model which is structured with engineering based quantitative measurement and evaluation for effect and cost, so that engineers should contribute more to these fields as their responsibility.

6. Asset management System for Infrastructures and System Maintenance

In the field, where social capital maintenance management is actually carried out, efficiently preserving stability with a limited budget is the most essential task. On the other hand, from the perspective of building, managing, and administering social capital with the purpose of maintaining a consistent service level, the efficient and effective execution of the entire budget is of primary importance. Each type of social capital naturally requires different kinds of asset management and philosophy.

Also, when considering the positioning of asset management within the administration, its relation to social capital management and supervision, as well as its relation to policy evaluation and accountability should be verified and the direction of social capital asset management must be clarified.

Though there is no universally accepted definition of asset management in social capital, when thinking about its role, it is important to clarify its position within administrations and define its scope. Taking the philosophies of various institutions in various countries as starting point, and considering the functions necessary for the development, maintenance, and management of social capital in Japan, we may define asset management as follows:

●Asset management definition (maintenance management view point: narrow sense)

Asset management is the execution of efficient and effective maintenance management by keeping social capital in a sound condition, checking its soundness through periodic inspection, etc. in order to continuously offer services to users, along with managing lifecycle costs, etc. Note: written referring to “Asset Management Primer” by the U.S.A. Bureau of Transportation

●Asset management definition (broad sense)

Asset management distributes a limited budget according to an optimum portfolio to achieve the needed outcome or maintain the value or service level that is needed for each social capital element, including the development of future social capital. An asset management system is a system to manage budget and asset evaluations in order to achieve this goal.

●(Efficient) portfolio definition

This denotes the optimum combination of recipients of limited assets in order to avoid risk and acquire the targeted effect in addition to that effect.

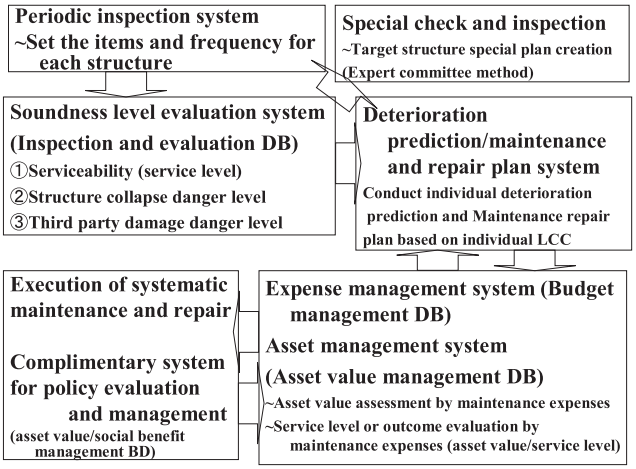

Figure.6 Basic system of Asset Management System

Basic strategic target of the Logic Model for Asset Management of infrastructures is to maintain infrastructures for services with which 1).satisfaction, 2).stable provision, and 3).efficiency as basic outcomes have to be provided to citizens. Countermeasures for these outcomes are 1).physical rehabilitation, 2).physical renewal, 3).new construction, and 4).inspection system related to these countermeasures. Asset Management System which consists of combination of these countermeasures is an output of NPM System.

Even though Asset Management System is properly designed for the outcomes, it is obvious that Asset Management System will not provide services to citizens properly if 1).social circumstances, 2).environmental circumstances, 3).technical circumstances, and 4).technological standards changes. Asset Management System and its Logic Model have to be designed and have to be changed to sustain compatibility to these factors.

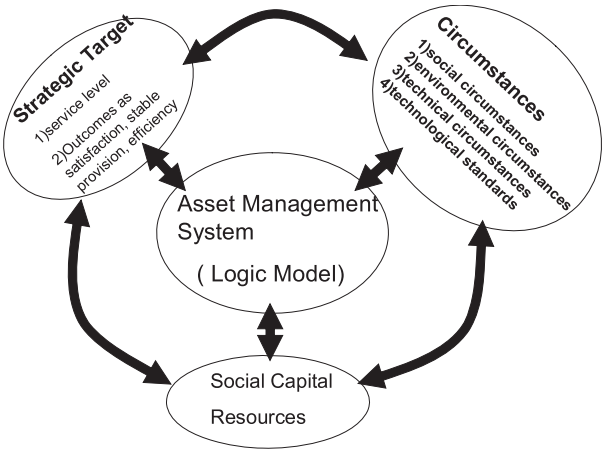

Figure.7 What should be checked for System Maintenance

For example, even though environmental circumstances dose not change rapidly, because of the lack of data, Asset management System and Logic Models have to be maintained with increasing environmental measurement and inspection information.

Technical circumstances like technological evolution of construction, rehabilitation, inspection, and technological standard could change countermeasures so that Logic Model, portfolio of the countermeasures alternatives such as physical rehabilitation, physical renewal, new construction, inspection system or combination of these them, or outcomes themselves have to be revised to fulfill strategic target which also changes with citizens' request.

These amendments have to be executed at three stages as explained for Infrastructure development plan, which itself is the NPM procedure to be exe-

cuted.

7. Conclusion and expected future activity

Conceptual structure of NPM system associated with Logic Model and engineering measurement and evaluation is introduced, which can be applied for development plan, service plan, or asset management system for infrastructure, yet there are not enough activities done along these NPM procedure. Some NPM activities is undergoing such as asset management for infrastructures, administrative planning for health care of old people, and other administrative activities by the author, but more activities is expected to be executed especially by engineers. And it will take some time to confirm the results of these activities.

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