Nan Chai

Sustainability Performance Evaluation System in Government

A Balanced Scorecard Approach Towards Sustainable Development

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For my son, and all children in the world

Foreword

The coming into being of this monograph could not have happened without a number of very courageous decisions under uncertainty: (a) the offer of the Government of the People's Republic of China to Ms. CHAI Nan for a three-year grant to prepare her doctoral dissertation at the University of Heidelberg in Germany, (b) the decision of the candidate to leave a highly responsible position at the National Audit Office of China in Beijing for a three-year-period of challenging adventures including study of the German language to get along in the foreign country, (c) the decision of the potential supervisor at the Faculty of Economics and Social Sciences of the University of Heidelberg to accept this candidate previously unknown to him, and (d) the common decision of the candidate and her doctoral supervisor to shift the focus of the dissertation project from general Western governmental auditing schemes to the problem of constructing and implementing new performance evaluation systems on a governmental level in order to control efforts of sustainable developments. Looking back, all these decisions paved the road to a very remarkable work, which now seeks the attention of a broader audience. Indeed, this book is worthwhile to be carefully studied, since it not only unfolds in highly general abstract, but also develops a creative and pragmatic theory, which might overcome the shortcomings of bureaucratic systems in the style of Max Weber on their way towards participative learning organizations, and therefore could play an active role in steps to sustainable development on all levels of a society.

As it turned out in this case, the possible "clash of civilizations" and confrontation of different scientific schools became a very fruitful exchange of ideas and the origin of a highly innovative approach to construct a new consistent framework for the design and control of sustainable development processes on the governmental level. Dr. CHAI carefully observed and analyzed the materials and information available in the Western literature, formulated "gaps" in the existing approaches towards a governance of sustainability and successfully developed her own approach, based on the transfer of the essential of the modern managerial tool of the Balanced Scorecard, which could overcome the shortcomings of the too single-minded management by objectives.

The author has used a clear understandable language to develop a theoretical auditing approach, which is oriented towards reality for monitoring sustainable development processes. This new theory needs still to be tested before it is widely

accepted, but I'm thoroughly convinced that it could be turned in a fruitful practice. The technologically driven growth principle has had the fatal side effects of creating all kinds of environmental and social damages. The sustainable development approach, accompanied and controlled by balanced measures has the potential to generate the necessary turnaround. May it happen in the future!

Heidelberg, March 2009 Dietfried Guenter Liesegang

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Abbreviations

ACCA21	Administrative Center for China's Agenda 21
BMBF	German Federal Ministry for Science and Education (In German: Bundesministerium für Bildung und Forschung)
BSC	Balanced Scorecard
CCPC	Committee of the Communist Party of China
CEAA	Canadian Environmental Assessment Agency
CESD	Commissioner of the Environment and Sustainable Development
CNAO	National Audit Office of China
CSC	China Scholarship Council
CSR	Corporate Social Responsibility
DEFRA	Great Britain Department for Environment, Food and Rural Affairs
DEG	Digital-Era Governance
DSR	Driving Force-State-Response
EA	Environmental Assessment
EAC	Environmental Audit Committee
ECIs	Environmental Condition Indicators
EEA	European Environment Agency
EIA	Environmental Impact Assessment
EMS	Environmental Management System
EnvIReS	Environmental Information and Reporting System
EPE	Environmental Performance Evaluation
EPI	Environmental Performance Index
ESDI	Environment and Sustainable Development Indicators
ESI	Environmental Sustainability Index
Eurostat	Statistical Office of the European Communities
FFU	Environmental Policy Research Centre (in German: Forschungsstelle für Umweltpolitik)
FMI	Financial Management Initiative
GAO	US General Accounting Office

GNP	Gross National Product
GPRA	Government Performance and Results Act
HIs	Headline Indicators
IISD	International Institute for Sustainable Development
INTOSAI	International Organization of Supreme Audit Institutions
INTOSAI WGEA	INTOSAI Working Group on Environmental Audit
ISO	International Organization for Standardization
KPIs	Key Performance Indicators
M&E	Monitoring and Evaluation
MBO	Management by Objectives
MDGs	Millennium Development Goals
MDPM	Multidimensional Performance Measurement
MOFA	Japan Ministry of Foreign Affairs
MPIs	Management Performance Indicators
NAPSIR	Needs-Activities-Pressure-State-Impact-Response
NEPA	National Environmental Policy Act
NIP	Network of Interested Partners
NPM	New Public Management
NRTEE	National Round Table on the Environment and the Economy
NSDS	National Sustainable Development Strategies
OAG	Office of Audit General of Canada
OMTI	Objective-Measures-Targets-Initiatives
OPIs	Operational Performance Indicators
PDCA	Plan-Do-Check-Act
PMA	President's Management Agenda
PPBS	Program, Planning and Budgeting System
PPPs	Policies, Plans and Programs
PSR	Pressure-State-Response
RBM	Result-Based Management
RNE	German Council for Sustainable Development (in German: Rat für Nachhaltige Entwicklung)
SAGE	Strategic Advisory Group on Environment
SBS	Sustainable Balanced Scorecard
SBSC	Sustainability Balanced Scorecard
SC4	Subcommittee 4
SDIs	Sustainable Development Indicators
SEA	Strategic Environmental Assessment
SEE	Social, Economic and Environmental
SEEA	System of Economic and Environmental Accounts
SEPA	State Environmental Protection Administration
SG	Strategic Gap
SMART	Specific, Measurable, Achievable, Relevant and Time-based
SMEs	Small-to-Medium-sized Enterprises

SPE	Sustainability Performance Evaluation
SPES	Sustainability Performance Evaluation System
SPIs	Sustainability Performance Indicators
SWOT	Strong-Weakness-Opportunity-Threat
TBL	Triple Bottom Line
TQM	Total Quality Management
UBA	German Federal Environment Agency (in German: Umweltbundesamt)
UN DESA	United Nations Department of Economic and Social Affairs
UNCSD	United Nations Commission on Sustainable Development
UNDP	United Nations Development Programme
UNDSD	United Nations Division for Sustainable Development
US EPA	United State Environmental Protection Agency
US OBM	United States Office of Management and Budget
USAID	United States Agency for International Development
WCED	World Commission on Environment and Development
WEF	World Economic Forum
WSSD	World Summit on Sustainable Development
WWF	World-Wide Fund for Nature
ZBB	Zero Base Budgeting
3 E's	Economy, Efficiency and Effectiveness
5 E's	Economy, Efficiency, Effectiveness, Environment and Equity

Chapter 1
Introduction

Abstract Progressing towards "Sustainable Development" as a national strategy raises important challenges to public administration and performance evaluation in government. After representing the research background, this chapter sets three problems faced by the current performance evaluation system named "strategic gaps" and then states that the study objective is to establish "Sustainability Performance Evaluation System" in government. In order to build up this new model, three methods are combined into a three-dimensional conceptual framework, and sustainability balanced scorecard is accepted as the basic tool to refine the new system and develop a set of indicators. Finally, the structure of this book will be introduced to facilitate readers to understand.

Keywords Sustainable development · Performance evaluation · Strategic gap · Balanced scorecard · New public management · ISO 14031 · Sustainability performance evaluation system

1.1 Research Background

Throughout history, there has been an increase of awareness to issues pertaining to the environmental conservation. Since the Club of Rome published its report *The Limits to Growth* in 1972, environmental issues have become an increasingly important question of development and economic policies. Especially after the most cited concept "Sustainable Development", which was given by the World Commission on Environment and Development (WCED) in 1987, was adopted by most of the world's nations in Rio de Janeiro in 1992, the idea "development that meets the needs of the present without compromising the ability of future generations to meet their own needs" redefined the goals of economic and social development in terms of sustainability, that is, the understanding of sustainable development moves from the environmental protection to the integration of three dimensions: social, economic and environmental development synchronously. To implement this strategy at the national level, *Agenda 21* (UN, 1992) called for all countries to develop their

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national sustainable development strategies (NSDS) as mechanisms for translating a country's goals of sustainable development into concrete policies and actions. So far, sustainable development has been accepted as a national development strategy in most developed countries and some developing countries, as shown on the map *National Sustainable Development Strategies: The Global Picture* (UNDSD, 2008) (see Appendix A).

Under this background, sustainable development prompted nothing less than a fundamental change in both decision-making mechanisms and public administration systems in government. Although many nations are only at the early stages of learning the effective strategic and coordinated action for sustainable development, innovations can be seen in some countries and in all aspects of the sustainable development strategy processes, including leadership, planning, implementation, monitoring and learning (Swanson, Pintér, Bregha, Volkery, & Jacob, 2004). On the other hand, the public sector reforms inside of the government, especially the revolution named "New Public Management" (NPM) since the 1980s, promoted the implementation of NSDS by suggesting the emphasis of the efficiency and effectiveness and cooperating with some business management methods and techniques, such as strategic management and total quality management (TQM), into the public sustainability-oriented management. At the same time, governments are increasingly being treated as one of the private parties that are responsible for the foreseeable consequences of their actions under sustainable development proceedings and face a growing challenge of communication and reporting.

As part of the cyclical process of continuous improvement towards sustainable development, monitoring and evaluation (M&E) play a central role for quality control and feedback (UN DESA, 2002; Mohamed, 2000) at two levels. On the macro level, they use indicators of sustainable development to measure the progress towards the achievement of overall goals of sustainable development that encompass social, economic and environmental objectives. On the micro level, M&E lay focus on measuring the progress toward the short-term goals and objectives of the action plan and priority projects (Mohamed, 2000). Both of them provide information about the implementation of initiatives, which are not only put forth in the sustainable development strategy and economic, social and environmental trends to facilitate the decision-making, but also to promote transparency and accountability to all stakeholders. Some countries integrated sustainable development principles directly with their existing national development planning process and the budget process. Some countries established a clear legal mandate for the strategy process and integrated the M&E into their performance evaluation systems in government. Canada is such a pioneer model, where under the *Auditor General Act* in 1995, all federal departments are required to submit individual Sustainable Development Strategies to the parliament every three years. The strategies must include commitments of actions and targets to achieve sustainable development, and means for auditing the departments' performance by the Commissioner of the Environment and Sustainable Development (CESD). In the UK, a parliamentary Environmental Audit Committee (EAC), with a similar function as Canada's CESD, has the mandate to review the impacts of policies and actions on sustainable development across

all departments (Swanson et al., 2004). These innovations and attempts show a general tendency: sustainable development has been accepted widely and it virtually began to be integrated directly with the national strategy and planning, as well as the core administrative control systems in government.

1.2 Problem Setting

Progressing towards sustainable development raises important challenges to performance evaluation in government, too. As a special organization whose decisions play an active role in shaping the lives of people, as well as the national even global environment (Moldan, 1997), government is accountable for making its administrative behaviors compatible with the sustainable development. When sustainable development was integrated into the sectoral strategic planning process, identification of the responsibility for the implementation of policy initiatives is set out on individual ministries and agencies, which is also critical for progress. Therefore, it is increasingly significant to improve performance evaluation, a key element of modern public management, into the new phase of sustainability performance evaluation in government. It not only determines the effectiveness and efficiency of key strategies and programs, but also improves sustainability and accountability of government and its agencies.

However, a review of the strategy development experience of the last decade suggests that most strategies put little emphasis on M&E (UN DESA, 2002). The case studies on sustainable development strategy process in 19 countries by the International Institute for Sustainable Development (IISD) show that only a few countries had approaches or tools in place to formally monitor and report the progress toward the implementation of initiatives (Swanson et al., 2004). These attempts of evaluating sustainability performance in some countries (e.g., Canada and the UK) emphasize the achievements of strategic goals and preset objectives within the framework of Result-Based Management (RBM), but pay less attention to providing information about the translation and formulation of the strategy "Sustainable Development" to administrative objectives and activities. Furthermore, performance evaluation systems have been financially based and prove a limiting effect on the criteria used to measure and assess sustainability performance (Griffiths, 2003). Even though some approaches of environmental performance evaluation have been developed and carried out in many countries, they are only considered as a subsystem of the traditional performance evaluation in government, which only focuses on the economic and environmental results and pays less attention to integrated sustainability objectives that encompass social, economic and environmental issues. In general, the performance evaluation of sustainability management in government is still quite under-developed.

At the same time, the public sector reform promotes the transfer of the public sector from a rule-bound bureaucracy to a mission-focused organization that responds to the needs of the public. In order to ensure that performance results are

consistent with the mission and strategies of government and that satisfy citizens with the public service quality, current performance evaluation practice must be improved to be a participatory process so that it can measure what citizens really care about. Since the concept of sustainable development was firstly mainstreamed in the late 1980s and early 1990s, the advancements in participatory governance have been quite significant (Swanson et al., 2004), which help national strategies obtain the collective feedback of all stakeholders in the country. However, performance measurement remains largely management-driven and focuses on both quantitative and qualitative measures to assess progress in achieving strategic goals and objectives (Pintér, Hardi, & Bartelmus, 2005), and few approaches of performance evaluation were pursued for institutionalizing citizen participation (Vergez & Caddy, 2001). For the sustainability-oriented management in mission-focused government, these limitations are really "death-wounds", and may cause immeasurable risks for the organizations in the future.

Though not excluding the possibility of other weaknesses, the mentioned above problems can be formulated as three "Strategic Gaps" between current performance evaluation systems and an ideal system. The gaps are as follows:

Strategic Gap 1: Current performance evaluation system focuses on measuring the achievement of preset objectives and targets, but pays less attention to strategic control of the translation and formulation of the strategy "Sustainable Development" to administrative objectives and plans.

Strategic Gap 2: Current performance evaluation system focuses on the financial and/or environmental performance, but pays less attention to integrated "Sustainable Development" objectives that encompass social, economic and environmental performance in a balanced manner.

Strategic Gap 3: Current performance evaluation system focuses on the managerial accountability and performance improvement, but pays less attention to citizen satisfaction and participatory approaches.

In order to bridge the gaps, it is necessary to develop and implement a new system to measure the sustainability performance in government.

1.3 Research Objectives

The primary objective of this book is to attempt to set forth a "Sustainability Performance Evaluation System" (SPES) in government. "Government" in this book means an institution, which has the executive function of the state to create the national strategy and framework towards sustainable development by developing strategies, policies and programs at the national level (INTOSA WGEA, 2004). That is, this research focuses on the national level government to build up a simple and intelligible model and promote the sustainable development at national level, but

even so, the conceptual model is still valuable for the sustainability performance evaluation system on the international, regional and local level.

SPES goes beyond the traditional performance evaluation as an essential part of management control in that it validates whether the preset results are realized, and provides a strategic control tool to measure the sustainability performance in government and its agencies to ensure that the strategy "Sustainable Development" has been translated accurately into actions. This strategic control system brings three-dimensional results of sustainable development and their determinants into the evaluation scope, and integrates the citizen participation into internal management and organizational learning process. Finally, all of the objectives and measures will be translated into a set of indicators, which will be the core of SPES, providing clearly and easily understood information about different aspects of sustainability progress and performance at various levels within a government system.

The design and implementation of SPES has several objectives, including assisting the strategic planning and decision-making, feedback on progress toward sustainable development, quality control and personal incentive. However, considering the public values of a government, SPES is designed to provide information about the successes and weaknesses of administration so as to promote the sustainability management performance of the government and its agencies, which makes the government accountable to the public for their activities compatible with the national strategy "Sustainable Development". That is, the ultimate objectives of SPES are both public accountability and performance improvement. This is just the core, where the public sector differs from the for-profit sector.

This research is still with the purpose of seeking after a future way for the development of a performance evaluation system for Chinese government[1] in international perspectives. China, with extraordinary economic growth over the last 20 years, stands at a critical crossroad to shift the national development strategy to sustainable development, especially after the goals of building a socialist "Harmonious Society" was written down in the policy guidelines delineated in *Ninth Five Year Plan for National Economy and Social Development and the Vision Guidelines for 2010 of the Peoples Republic of China* (China's 11th Five-Year Plan) (CCPC, 2005). "Because of China's size and the greater-than-ever connectedness across the globe, the world needs China to deal with environmental issues, and China needs the rest of the world for its experience and know-how on managing environmental problems." (Wang, 2005) SPES summarizes the development and successful experiences worldwide, and outlines a concept of the sustainability performance evaluation in government. It will be very meaningful to strengthen government reform and improve public administration and services in China.

[1] This research is funded by China Scholarship Council (CSC), which is supported by the government of P. R. China.

1.4 Research Methods

To develop a new system, it is necessary to find where and why its current performance falls short, and determine "what it needs to improve" or "where you would like to be in the future". The results are used to create a plan of actions so that the "gaps" are filled-in and the goals become realized. Thus, this research begins with a gap analysis and formulates the current problems of performance evaluation into three "Strategic Gaps" by tracking and analyzing the development of evaluation systems in government within the context of public sector reform. Aiming at the three gaps, a three-dimensional conceptual framework of SPES is built up, which is based on three theories concerned: Environmental Performance Evaluation (EPE), Strategic Performance Evaluation and NPM.

As one main part of Environmental Management System to support the objective of "sustainable development", EPE collects ongoing data and information and measures how effectively an organization manages its environmental aspects to continually improve its environmental performance. ISO 14031 provides not only a well-structured EPE including guidance on the selection and use of indicators, but also a platform to improve environmental management activities into more broadly sustainability performance measurement and reporting initiatives. Some new styles of EPE, such as the third-generational EPE and sustainability performance evaluation, give creative suggestions to establish the new model of SPES.

In particular, this work goes into the broad area of strategic management. Considering its excellent experiences in the business world and successful practices in sustainability performance evaluation, the powerful tool Balanced Scorecard (BSC) is used as the principal method and is improved into "Sustainability Balanced Scorecard" (SBSC) for the SPES in government. It will give us the advantages to determine the most important objectives and performance criteria including the non-financial performance drivers or determinants, which will form a "Balanced" mechanism for improving the possibility that the organization can successfully implement the strategy sustainable development. Moreover, it also establishes a framework to translate the missions and strategies into a set of performance indicators distributed among the perspectives for SPES in government.

A combination of ISO 14031 and BSC can be tracked during the development of sustainability performance evaluation at present, which will be accepted as the basic model in this book: adopting ISO 14031 as a platform with the systemic structure and indicator set, and the BSC providing the framework to extend the objectives and measures from the results to the determinants. However, the introduction and implementation of the above models into the public administration still face a challenge: how to modify these theories and methods rooted in the for-profit sector to meet the requirement of SPES in government. Some thoughts and practices of NPM, such as market-, results- and customer-orientation, will be adopted as the primary rationale to penetrate into any perspectives of SBSC. In broad sense, this introduction of ISO 14031 and BSC into the public sector is following the theory of NPM, too. During the modification, the differences between the public and private sector must be emphasized necessarily, which will correct the extreme opinions of NPM such as

oversimplified privatization. For instance, the mission of government determines the primary objectives of sustainability management to be "Citizen Satisfaction" but not financial success, which will lead to a thorough change of performance evaluation of objects, processes and indicators in SPES.

Since this research is basically an exploration of a new method, it is difficult to make any empirical analysis or field study. But an international comparative study will be performed in Chapter 5, where the historical cases among the four selected countries are analyzed, which will validate and refine the new SPES.

1.5 Structure of This Book

This book is separated into six chapters. Chapter 1 is an introduction, representing the research background, setting the problems and study objectives, and introducing the research methods and structure of this book. In Chapter 2, an overview of the previous research concerned is given, including EPE, Strategic Performance Evaluation, NPM and its reflection, which provides three footstones for the new performance evaluation model in the following texts. Chapter 3 begins with three

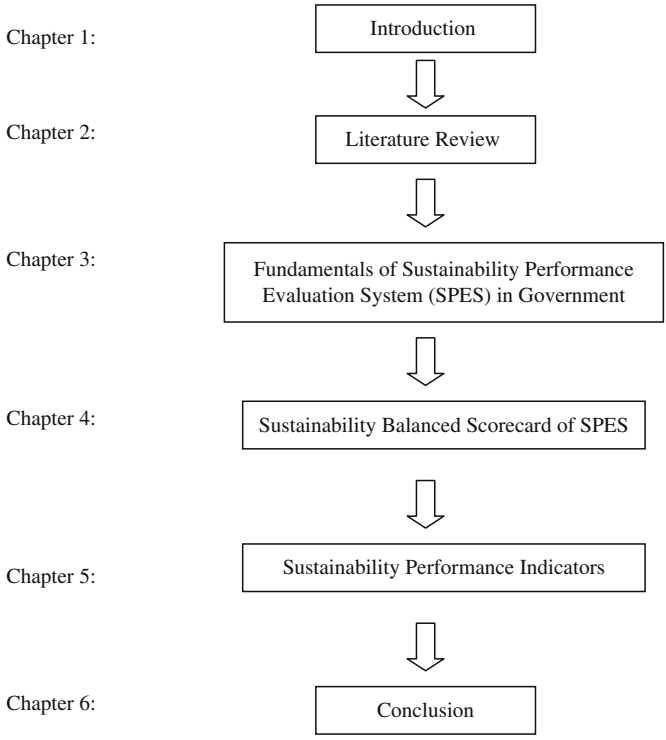

Fig. 1.1 Structure of This Book

"Strategic Gaps" as the basis to build up a three-dimensional conceptual framework, and then presents the fundamentals of SPES, including the evaluation objective, scope, standard and process, outlining "what" and "how" to develop this new performance evaluation system. It lays the foundation of the research. In order to refine this new system, Chapter 4 seeks for the help from BSC and improves it into the SBSC, which integrates the sustainable development as the primary objective with those secondary objectives, and brings the citizen satisfaction and participatory approaches into the system. Based on the SBSC framework, as the consequence of this study, a new indicator system "Sustainability Performance Indicators" for SPES is developed in Chapter 5, where the key achievements and limitations of indicators or indicator sets for sustainable development developed by some organizations and governments are reviewed, and the "Strategic Gaps" existing in the current performance evaluation systems from another perspective are analyzed again. Thus, a new system for the sustainability performance evaluation in government is built up and validated. Chapter 6 shows the conclusion. Several research limitations and a number of suggestions for the future research are mentioned, too. The structure of this book is shown in Fig. 1.1.

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Chapter 2
Literature Review

Abstract The purpose of this chapter is to give an overview of the previous research concerned. This review consists of three parts. The first part introduces the "Environmental Performance Evaluation" (EPE) under the background of promoting "Sustainable Development" in the business world. The second part focuses on the "Strategic Performance Evaluation", a framework of measuring the achievement of long-term goals and non-financial objectives of organizations. Both of them demonstrate the necessity and feasibility for the development of a new performance evaluation model based on the ISO 14031 and the Balanced Scorecard (BSC). Since the book will introduce the above theories and methods rooted in the for-profit sector to the public sector, the "New Public Management" (NPM) and its reflections are discussed in the final part, which will give some advice to modify and improve the business methods to a new model used in government. This chapter thus provides three footstones to build up the conceptual framework for the new performance evaluation model in the following text.

Keywords Environmental performance evaluation · ISO 14031 · Strategic performance evaluation · Balanced scorecard · New public management

2.1 Environmental Performance Evaluation (EPE)

2.1.1 Sustainable Development and EPE

In order to realize the sustainable development at the micro level, *Agenda 21* (UN, 1992) asked all business and industry, including transnational corporations, to recognize environmental management as one of the highest corporate priorities and as a key determinant to sustainable development. Based on the results of a survey of international experts in corporate social responsibility (CSR) and sustainable development, the Triple Bottom Line (TBL), coined by Elkington in 1994, has been

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popularized globally by SustainAbility Ltd.[2] as a framework for organizations to translate the concept of sustainable development into the operation of organizations since the mid-1990s (Elkington, 2004; Coelho, 2005). Environmental Management System (EMS), a structured approach to addressing the environmental bottom line (ISO, 2002), integrates environmental management into the core management system for many organizations. As the world's most recognized EMS framework, ISO 14001 and its family ISO 14000 series help organizations both better manage the impact of their activities on the environment and demonstrate sound environmental management (ISO, 2002) by identifying, evaluating, managing and improving its environmental performance to work toward sustainability.

ISO 14000 series grew out of the commitment of International Organization for Standardization (ISO) to support the objective of sustainable development discussed at the United Nations Conference on Environment and Development (UNCED) in Rio de Janeiro in 1992[3] as a measure to "strengthen the role of business" in the *Agenda 21* process (Seifert, 2001, 2005). To define the basic requirements of a new approach to environment-related standard, an intensive consultation process was carried out within the framework of ISO/IEC Strategic Advisory Group on Environment (SAGE) in 1992. In the next year, ISO launched the new technical committee (TC 207) for environmental management.[4] As a result, the first standard ISO 14001 *Environmental Management Systems – Specification with Guidance for Use* was published in 1996. Subsequently, environmental auditing, environmental labeling, environmental performance evaluation, and life cycle assessment were issued, which make contributions to the environmental and economic components of sustainable development (ISO, 2002).

As the old adage that "what gets measured, gets managed", EMS also provides a system for collecting data and information to measure how effectively an organization manages its environmental aspects to continually improve their environmental performance. Environmental performance evaluation (EPE) is "a collective term for the measurement and analysis of factors which are recognized as having a direct or indirect impact on the environment" (Wathey & O'Reilly, 2000). Among the ISO 14000 family, ISO 14031 *Environmental management- Environmental performance evaluation – Guidelines* provides guidance on how an organization can evaluate its environmental performance. The standard also addresses the selection of suitable performance indicators, so that performance could be assessed against criteria set by management. This sort of information could be used as a basis for internal and external reporting on environmental performance (ISO, 2002). In a PhD research, Coelho (2005) compares ISO 14031 (1999) with another approaches used to evaluate environmental performance, such as Global Reporting Initiative (GRI), Gscore,

[2] SustainAbility is a consultation company established in 1987, which advises clients on the risks and opportunities associated with corporate responsibility and sustainable development. See its homepage at http://www.sustainability.com.

[3] See "Where did the ISO 14000 family come from?", retrieved from the homepage of ISO: http://www.iso.org/iso/en/iso9000-14000/understand/basics/basics14000/basics14000_2.html.

[4] As before.

Green Zia model, and so on, then draws a conclusion: ISO 14031 (1999) is a "structured, effective and efficient process for environmental performance evaluation". As a part of ISO14000 series or a stand-alone environmental management tool, it has been used by organizations of all sizes, types, locations and complexity, providing benefits to organizations with and without environmental management systems in place, such as, to identify the key environmental aspects, establish environmental performance criteria, and assess performance against these criteria (Putnam, 2002). Certain concepts and components of EPE have been applied for more than a decade (Putnam, 2002), and the application of ISO 14031 in the public sector began in the last decade, and some examples of implementation in the governments and non-government organizations, such as, the city of Seattle and Silicon Valley in USA, could be seen in ISO 14032 (Seifert, 2005). Even though this application did not spread widely in the world, but the idea regenerated the evaluation of government environmental performance as an evolution rather than a complement of the traditional evaluation system, while it can provide an effective vehicle for the application of environmental performance monitoring initiatives at an international, national, local or sector level (Wathey & O'Reilly, 2000). Thus, the experiments and lessons of ISO 14031 should be very useful to conceive the new evaluation system for sustainability performance in government.

2.1.2 ISO 14031

As one of the original five main areas of ISO 14000 series, there was a US-led subgroup of SAGE named "Environmental Performance", originally interested in standardizing environmental performance. Once TC 207 was firmed, standardizing environmental performance was replaced by creating a standard that addressed EPE but not environmental performance, primarily because of the recognition that environmental performance is a public-sector issue currently under the domain of sovereign national government (Cascio, Woodside, & Mitchell, 1996). The concept "Environmental Performance Evaluation" (EPE) was developed in 1993 by the Subcommittee 4 (SC4), and was released in late 1999 as the last standard of the original ISO 14000 family. But even before 1999/2000 users had already begun gathering experience with this new instrument for measuring performance, which had proven the standard to be an effective instrument especially for small-to-medium-sized enterprises (SMEs) (Seifert, 2005).

2.1.2.1 Concept of ISO 14031

ISO 14031 is an international guidance standard but not a standard for certification like ISO 14001, which describes EPE as a tool to measure and assess an organization's environmental performance "to facilitate management decisions regarding an organization's environmental performance by selecting indicators, collecting and analyzing data, assessing information against environmental performance criteria,

reporting and communicating and periodically reviewing and improving this process" (Dias-Sardinha & Reijnders, 2001).

The definition of Environmental performance in 1999 is "the results of an organization′s management of its environmental aspects", but this definition in ISO 14001 (1996) is not the same, that is "the measurable results of the environmental management system, related to an organization's control of its environmental aspects, based on its environmental policy, objectives and targets" (Wathey & O'reilly, 2000). Thus we can find that the definition of environmental performance by ISO 14031 is much broader than the definition by ISO 14001. In ISO 14001, the definition of environmental performance primarily has to do with improving the environmental management system, so the performance results are related to an organization's "environmental policy, objectives, and targets". Consciously, SC4 defines environmental performance as "results of an organization's management of its environmental aspects", that is, not the environmental management system itself, but the results of environmental management, the real environmental performance of an organization. According to Seifert (2005), this significant change in philosophy compared to the flagship 14000 series represents the differences between the Anglo-Saxon and the Rhine model, and attributes to the leadership of U. S. in SC4. Some argue that this definition open the door for the documents to be used more broadly, i.e., as a way to compare one organization to another (Cascio et al., 1996).

2.1.2.2 Continual Improvement Process of ISO 14031

The process described in this standard is based on the process improvement model Plan-Do-Check-Act (PCDA) (Putnam, 2002).

- **Plan** (Preparation): The focus of planning efforts is on the selection of indicators, which should be based on significant environmental aspects, environmental performance criteria (including internal criteria as well as regulatory standards) and the views of interested parties.
- **Do** (Assessing Performance): Assessing performance involves collecting data, converting the data into information, evaluating the information, and communicating the results.
- **Check and Act** (Reviewing and Improving Performance): EPE results should be reviewed periodically to identify opportunities for improving environmental performance and EPE system.

Furthermore, as one part of the PDCA of EMS, EPE checks and identifies the opportunities and needed actions for improvement, while this process integrates the EPE system with the management system closely. According to Wathey and O'reilly (2000), the systematic EPE integrates with all of the processes of the PDCA model of EMS, from the developing an environmental policy, planning the EMS, and then implementing, checking the system and acting on it. During the continual improvement process of EMS and EPE, EPE can present the useful and credible information to identify problems and facilitate improvement of the performance of

environmental management by constantly reviewing and revising the system. At the same time, the integration into the EMS can help organizations avoid redundant data and departmental overlaps in operations by promoting integrated, organization-wide information systems capable of gathering salient details for both regularity compliance and strategic success purposes.

2.1.2.3 Innovation in the Indicator System of ISO 14031

ISO 14031 is one guidance on the selection and uses a tool box of environmental performance indicators to provide information on performance, and indicate possible future performance by comparing an organization's past and present environmental performance with its relevant, practical environmental performance criteria, which are always predetermined by environmental policy and objectives of organizations (Coelho, 2005). With a number of useful indicators, environmental performance can be measured and tracked simply and conveniently to facilitate continuous improvements. Despite an attempt from SC4 to make the two definitions of environmental performance compatible with one another, this difference has remained an apparent contradiction in the series of standards. ISO 14031 describes two general categories of indicators to support the implementation of EPE (Wathey & O'reilly, 2000):

(1) Environmental performance indicators (EPIs), including two types of indicators:

- Management performance indicators (MPIs): provide the information on the activities of management to improve the environmental performance of an organization;
- Operational performance indicators (OPIs): provide information on the environmental performance in the operative area of an organization, based on a definite input-output table structure, thus providing the operative processes with an explicit physical framework.

(2) Environmental condition indicators (ECIs): represent information about the local, regional, national and global condition of the environment caused directly by its own activities, products and services.

From the above indicator system, we can find two innovations of ISO 14031: one is the using of MPIs, which is an important determinant of companies' future environmental performance involving the internal and learning process; the other is the using of ECIs, which integrate the economic, environmental and even some indicators relating to social issues into one model. The two points reflect some indications that EPE begins to extend the evaluation scope from the results to the determinants of results, and tries to develop the environmental strategic objectives from the eco-efficiency to encompass three principles of sustainability (social, economic and environmental).

2.1.2.4 Weaknesses of ISO 14031

Even though the ISO14031 is a successful tool that was developed to assist organizations to develop a well-structured performance evaluation system, including guidance on the selection and use of indicators, however, it still has some limitations. Bennett and James (1999) state that the ISO 14031 has limited linkage with the broader issues of sustainable development, and addressed the requirements for third generation EPE to achieve strategic effectiveness. Seifert (2005) points out two weaknesses of the standard: the "assessment gap" and the insufficient guidance on reporting and communication. Furthermore, the innovations of indicator system are only at the early stages and still focus on the conformity with defined results, but not penetrate into the strategic planning process. Finally, ISO 14031 still has one substantial gap mentioned above, that is, EPE focuses mainly on the environmental and economic components of sustainable development and the triple bottom line, because an EMS is a structured approach to addressing the environmental bottom line. Even thought ISO has detected the neglect of the social perspective of EMSs, and published ISO 14063:2006 on environmental communication guidelines linking to the external stakeholders, which includes a process to evaluate the environmental communication (ISO, 2006), there are still many challenges to combine ISO 14063 with EPE and to close the gaps existed in the environmental performance evaluation system.

2.1.3 Some Models of Improving EPE

In response to increasing interest in sustainability and increasing requirement of data and information for specific corporate and government reporting, the environmental strategic objectives of organizations are increasingly being broadened. EPE is expected to have an increasingly important role to play as companies integrate environmental management activities into more broadly sustainability performance measurement and reporting initiatives (Putnam, 2002). To develop a new performance evaluation framework named "Sustainability Performance Evaluation Management System Model", Coelho (2005) agues that ISO 14031 (1999) only focuses on the environmental area but shows an entire process on how to develop it into a new methodology for performance evaluation that should encompass aspects such as social, economic and environmental (sustainable principles) and aggregate specific information derived from other validated approaches such as the Balanced Scorecard. Such proposals have been made regarding sustainability performance evaluation as follows.

2.1.3.1 Third-Generational EPE

Bennett and James (1999) outline a three-generational model of EPE, after reviewing the strength and weakness of ISO 14031 and positioning it as the first-generation (related to risk management and cost control) and second-generation (influenced

by stakeholder management, TQM and pollution prevention). In response to the new changes, such as, increasing stakeholders' pressure for greater transparency and corporation social responsibility to sustainable development, providing an overall assessment of business sustainability, including social dimensions, becomes an increasingly important objective in third generation of EPE (Bennett & James, 1999). To achieve strategic effectiveness, the overall objective of the third generation EPE, the needs of all stakeholders toward sustainable development should be taken into account, so that "the overall objective of measurement at this stage became a balanced scorecard that covers the economic and environmental issues" (Bennett & James, 1999). Finally, they develop a "diamond" model to position different types of "third generation" indicators, in which the individual indicators are arranged into an environmental balanced scorecard and relative indicators become more important for comparative analyses while financial performance and environmental condition indicators are developed (Bennett & James, 1999).

2.1.3.2 Sustainability Performance Evaluation

Dias-Sardinha and Reijnders (2001) propose six primarily environmental strategic objectives that may guide performance evaluation: regulatory compliance, pollution prevention, eco-efficiency, eco-innovation, (eco)-ethics, and sustainability. The questionnaire by Dias-Sardinha, Reijnders, and Antunes (2002) in Portugal shows that sustainability as a distant goal would be accepted if the information and manual are clearly written and suitable for adaptation by organizations, even though the current environmental objectives of industrial organizations are focused on regulatory compliance and pollution prevention. Due to the importance of linking performance measurement to the environmental strategic objectives of organizations and to performance references, EPE should be improved to the new phase "Sustainability Performance Evaluation", which evaluates the long-term sustainability of environmental, social and economic aspects of organizational performance. Finally, they develop a series of performance references for the organizations to guide the organizational activities by consideration of sustainability (environmental, social and economics justice between generations and with respect to contemporary). After reviewing the introduction of the Balanced Scorecard into the environmental management, they propose a Thematic Cascading Balanced Scorecard to indicate the level of economic, social and environmental performance that an organization expects to achieve (Dias-Sardinha et al., 2002).

2.2 Strategic Performance Evaluation

Sustainable development brings challenges to individual organizations to manage their resource to meet the needs of the present without compromising the ability of future societies to meet their own need (Coelho, 2005). To achieve the success toward sustainable development, it is thus crucial to manage the organizational resource strategically, that is, in an efficient manner through a process of strategic

planning, implementation, controlling and improvement. In the strategic management process, it is so essential to determine how well or whether the chosen strategy is achieving the organization's objectives (Byars, 1984). When the need for strategic control is getting raise, the adoption of balanced scorecard by those models in last section to improve the EPE shows us the potentialities and necessity to introduce the strategic performance evaluation as one method to develop a new model of sustainability performance evaluation.

2.2.1 Review of Strategic Performance Evaluation Framework

Since the 1980s, both practitioners and researchers have emphasized the need to move beyond financial measures of operations and incorporated a much wider variety of non-financial metrics in an organization's performance reporting and reward systems (Kaplan, 1983; Johnson & Kaplan, 1991). The criticisms, levied against the overabundant use of financial measures that are not consistent with today's business realities and sacrifice long-term thinking (Niven, 2002), lead to the revolution in performance measurement, prompt organizations to implement non-financial measures that appropriately reflect their objectives as well as financial measures, and bring widespread acceptance of the need for organizations to take a balanced measurement approach.

In the 1980s and 1990s, a plethora of measurement frameworks were designed to help organizations implement a balanced set of measures (Kennerley & Neely, 2002). Fitzgerald, Johnston, Brignall, Silvestro, and Voss (1991) group the multidimension performance in service industries under two heads: the results and the determinants of the results. Atkinson and McCrindell (1997) distinguish between primary objectives, which are externally oriented and concerned with measurable deliverables, and internally oriented secondary objectives concerned with how services will be delivered. In the area of strategically oriented performance measurement, Kaplan and Norton's Balanced Scorecard (BSC) has been one of the most debated suggestions for developing a framework for performance measurement and management (Bukh & Malmi, 2005). The BSC (Kaplan & Norton, 1992, 1996) argues for performance measurement over four dimensions of performance: financial, customer, internal business processes, learning and growth. The three models group their performance objectives and measures into two groups and each group shares the similar meanings (see Table 2.1).

Table 2.1 Three Models of Strategic Performance Evaluation

	Group 1	Group 2
Fitzgerald et al. (1991)	Results	Determinants of the results
Atkinson and McCrindell (1997)	Primary objectives	Secondary objectives
Kaplan and Norton (1992)	Financial, Customer	Internal process, Learning and growth

These models not only move beyond financial measures and incorporate a much wider variety of non-financial result in an organization's performance reporting, but also provide some new methods of balancing the accuracy and integrity of the financial measures with the drivers of future success of the organization by a strong linkage between strategic plans and performance measures (Kloot & Martin, 2000). Moreover, the performance implication was extended further from the results (primary objectives) to the determinants (secondary objectives).[5] The determinants include not only the organization's strategic planning process, but also all means of achieving long-term, sustained organizational improvement, such as personal, technical and organizational capacity. Based on the causality between the results and determinants, the measures and targets could be identified to achieve the strategy and organization's sustainability. Kennerley and Neely (2002) point out that the strategic performance evaluation frameworks display a number of key characters as such:

- **Balanced approach:** the measures should provide a "balanced" picture between financial and non-financial measures, between internal and external measures, and between efficiency and effectiveness.
- **Multi dimensional:** performance measures extend from the financial to environmental and social perspectives, which reflect the need to measure all the areas of performance that are important to the organization's success.
- **Comprehensiveness and succinct overview of the organization's performance:** all possible measures of an organization's performance, which is easily understood by users and applied to the organization, are included into the framework and identify where there are omissions or where there is a need for greater focus.
- **Encouraging congruence of goals and actions:** integrate both across the organization's functions and through its hierarchy.
- **Results as function of determinates:** this demonstrates the need to measure results and drivers of them so that the performance measurement system can provide data for monitoring past performance and planning future performance.

This new approach of strategic performance evaluation developed since 1990s recognizes the importance of a focus on both results and the means of achieving these results. That means, the performance evaluation scope should extend from the strategy implementation to the planning process and organizational capacity development, which can ensure the strategy of sustainable development to be translated into actions and implemented effectively and efficiently. As one representative model, owning to its success in the past decade and significance in this book, the BSC will be introduced separately in the following section.

[5] In this book, "result" is the synonym of "primary objective", and they are considered to be interchangeable. So are "determinant" and "secondary objective".

2.2.2 Balanced Scorecard (BSC)

The Balanced Scorecard (BSC) originated in American in early of the 1990s by Robert S. Kaplan, a professor of Harvard business school, and David P. Norton, a consultant from the Boston area. The primary purpose of the project of USA Nolan Norton Institute was to develop business performance evaluation system. During the researching, they found the weaknesses of the traditional financial performance evaluation that the current system overemphasis on financials and leads to the "unbalanced" situation with regard to other perspectives. So, a new approach including additional financial-related data was proposed to "balance" the financial perspective. In 1992, Kaplan and Norton published their first paper *The Balanced Scorecard – Measures That Drive Performance* in Harvard Business Review, and declared the birth of BSC. When the famous book *The Balanced Scorecard: translation strategy into action* was printed in 1996, the BSC had developed itself from performance evaluation system into a strategic management system which will lead to long-term success (Kaplan & Norton, 1996; Balanced Scorecard Institute, 1998; Niven, 2003).

2.2.2.1 Basic Concept of BSC

Although the BSC has been discussed and considered widely in both practice and research, it is still necessary to outline its basic concept for the integrity of this section. The first innovation of the BSC is to review the organizations from four perspectives, after recognizing the limitations of traditional financial performance evaluation system:

- **Financial perspective**: because the final objective of an enterprise operation is to make profit for shareholders, the BSC retains an emphasis on achieving financial objectives.
- **Customer perspective**: the loyalty of the customer to their suppliers is so critical that "customer satisfaction" becomes one of the core outcome measures and long-term strategy.
- **Internal process perspective**: in this perspective, executives will identify the key processes in which an organization must excel to meet the above objectives.
- **Learning and growth perspective**: to face the serious change of competition environment and meet the long-term goals, the companies should continually improve their capabilities to achieve the internal process improvements, customer satisfaction, and ultimately financial success.

When the BSC presents with these four perspectives, it can limit the number of objectives and indicators to reduce the problem of exceeding information and failing to select the most crucial elements (Kaplan & Norton, 1996; Kan, 2004). Moreover, the BSC is more than a collection of key success factors or indicators, in which the four perspectives link together to translate vision and strategy into a comprehensive set of objectives and measures with cause-and-effect relationships.

Measurements are also identified as mixtures of outcome measures (lagging indicators, which represent the firm's past performance) and performance drivers (leading indicators, which motivate future action to improve the firm's business processes).

2.2.2.2 Application of BSC in the Public Sector

The BSC was developed not more than 15 years ago, but its success in the business world has been very outstanding. Nearly half of the Fortune 1000 organizations have adopted it in their organizations, so that the BSC was selected by the Harvard business Review as one of the 75 most influential business ideas in the twenty-first century (Niven, 2003). Though it was originally conceived for the for-profit sector, the BSC is not a tool just for profit-driven organizations and has evolved to become a useful tool equally applicable to not-for-profit organizations with tremendous success in non-profit and governmental agencies around the world (Niven, 2003; Bocci, 2005). For non-profit operations, the multi-objective approach of the BSC concept is both reasonable and attractive (Olve, Roy, & Wetter, 1999). Kaplan and Norton (1996) point out that the BSC can translate a vision and strategy for government and not-for-profit organizations into tangible objectives and measures, and offer even greater opportunity to improve the management of not-for-profit enterprises, especially those chartered to provide social service to the community.

When the drive for reform in the public sector worldwide has focused on the measurement of performance in public sector organizations, the BSC provide a strong linkage between strategic plans and performance measures (Kloot & Martin, 2000). Some practices and implementations of the BSC in the public performance management systems have been carried out by both central and local government and in several fields of public service, such as the library, public health and school as well. The examples, such as cities of Charlotte, North Carolina, showed the success of BSC in the public sector (Niven, 2003). For a period of time in Washington State of USA, the Governor's Office also strongly encouraged agencies to adopt the well-known quality improvement tool, the BSC approach, to strategic planning, while some agencies reportedly continue to utilize this approach (JLARC, 2003). A number of Swedish municipalities were using various forms of scorecards too (Olve et al., 1999). Drawing on experiences in New Zealand government departments and Crown entities, Griffiths (2003) notes that the BSC provides government organizations an opportunity to demonstrate value for money and recognize the multiple dimensions of value.

Furthermore, due to the dissimilarity between the public and private sector, the traditional BSC should be adjusted and modified to fit the new environment and needs. For example, the governments and non-for-profit organizations emphasize an even stronger role of the citizens in specifying their objectives and performance driver, and their mission should be measured by how effectively and efficiently they meet the needs of their constituencies. The financial consideration can play an enabling or constraining role, but rarely as the primary objective. The adopting and modifying of BSC in the new performance evaluation system for the government will be discussed in Chapter 4.

2.2.2.3 Three Attributes and Weaknesses of BSC

As stated in the first chapter "introduction", the BSC will be adopted as the basic method and improved into "Sustainability Balanced Scorecard" (SBSC) for the new performance evaluation system SPES in government. So, after introducing the basic concept of BSC, now, the suitability of BSC as a tool of SPES will be discussed. Due to its three attributes, openness, causality and balance, the BSC will prove its acceptability and suitability for developing further.

Openness

The BSC has undergone significant changes with an open mind since its birth in the early 1990s. Firstly, BSC was created as "a set of measures that gives top managers a fast but comprehensive view of the business" by comparing goals with measures and putting strategy and vision at the center (Kaplan & Norton, 1992). In the past decade, the BSC has evolved from a performance evaluation tool to a strategic management system, or following the argument of Cobbold and Lawrie (2002), from a management control tool to strategic control tool. During its development, it works well in conjunction with the existing management processes and the other methods and instruments to obtain more power, such as, ISO14000 series, Cost-Benefit-Analysis, EFQM-Excellence-Model as well. Moreover, this approach is open to implement different kinds of strategies for both profit and non-profit organizations (Figge, Hahn, Schaltegger, & Wagner, 2002b). Besides financial perspective, BSC includes the additional non-market and financial-related perspectives, and remains open for the integration of further groups, such as, some examples of BSC for sustainability has been developed to measure social and environmental impacts (Epstein & Wisner, 2001; Coelho, 2005). Because of its openness, the BSC represents an adequate reference frame for the integration of ethical issues on the operative level and provide Know-how of how to deal with dilemmas between conflicting interests (Bieker, 2002).

Causality

The BSC is not a collection or hodgepodge of methods, instruments and indicators with the incompact and immoderately "openness", but supported by a robust "skeleton" which links every key part with logic framework. First of all, the internal causality makes the BSC rational and executable, by finding a solution to the problems facing to strategic performance management: there is no real result to be evaluated, when a strategy or plan is still a set of hypotheses. Moreover, the linkages, not only between all dimensions but also inside one perspective, make the BSC a powerful tool that enables an organization to pinpoint and track the vital few variables that make or break performance (Niven, 2003), and make the relationships among objectives (ends) and measures (means) explicit by systematic analysis, so that the most important perspectives will be under consideration. At the same time, based on the causality, the BSC determines some key performance indicators (KPIs)

that are linked in a way of chains of cause and effect. Therefore, the causality will enable the strategic performance to be managed and evaluated, and ensure that the closely linked vision and strategy can be easily understood and communicated.

Balance

Within the above-mentioned "openness" framework, based on a series of cause-and-effect linkages, the BSC still emphasizes to give coordinative attention to all perspectives, thereby gaining the "balance" between the results and determinants to ensure the strategic translation and continuous improvement of an organization. Niven (2003) thinks the concept of balance is a central and basic character of the BSC, and especially relating to three areas: balance between financial and non-financial indicators of success, between internal and external constituents of the organization, and between lag and lead indicators of performance. Moreover, the idea of "balance" still has further meanings to the public management and sustainable development. In the public sector, the public value is multi-oriented, and the tangible financial objective is not the primary any more. To deal with dilemmas between conflicting interests, especially when they cannot be quantified or monetarized "balance" is a valuable way to take all factors into consideration to identify and communicate the strategy, and promote the rationalization of public administration behaviors. To achieve the NSDS, defined as a process to achieve economic, environmental and social objectives in a balanced and integrated manner, the BSC can "balance" the financial performance and the non-monetarized social/environmental factors with non-market mechanism (Hahn & Wagner, 2001). Following the Chinese philosophy, "balance" is equal to "harmony". In order to achieve growth that is sustainable, it is essential to draw an outline of "balance" between human and nature, between the environmental conservation and other human goals (Feng, 2005). In this sense, balance can be considered as the "spirit" within the BSC, even within the new system for sustainability management and performance evaluation.

In brief, with an open mind, causal framework and balanced spirit, the BSC is in the ascendant in the last decades, and to date still keeps active to meet the various needs and develop further. However, the BSC still has some weakness. Anthony (1998) demonstrate that there are many pitfalls that an organization can encounter when trying to implement a BSC, such as, poor correlation between non-financial measures and results measures, fixation on financial results, no mechanism for making improvements, failure to update the measures, overload measurement and difficulty in establishing trade-offs. Nair (2004) addresses the eleven deadly sins of the BSC, including five people-related sins, three process-related sins and three technology-related sins, which need to be understood and conquered. Coelho (2005) still states that BSC works well as a tool to identify indicators, areas or pillars of sustainable management, but it does not address any specific, structured and step-by-step process for performance evaluation. Brignall (2002) argues that the BSC as the best known model of "integrated" and "balanced" multidimensional performance measurement (MDPM) still has an unbalanced limitation, that is, the social and environmental aspects aren't taken into account of the system. Since the BSC

should cater for the needs of all significant organizational stakeholders and the social and environmental aspects are currently enjoying a resurgence of public interest, he proposes to re-balance the BSC by incorporating social and environmental aspects as a separate organizational performance perspective that are of widespread concern. In the following text, a new approach or new generation of the BSC will be introduced, which integrate the social and environmental objectives into the BSC.

2.2.3 Sustainability Balanced Scorecard

When the BSC of Kaplan and Norton (1992, 1996) was accepted and used increasingly, some of larger companies began to integrate it with the environmental issues. It fits into not only "the third generation of environmental performance evaluation" of Bennett and James, but also, such as Balanced Scorecard Measures for Sustainability of Epstein and Wisner (2001) and the above introduced "Sustainability Performance Evaluation". Moreover, some respective research groups in Germany advanced another new concept "Sustainability Balanced Scorecard" (SBSC) for corporate sustainable development (Bieker & Gminder, 2001; Bieker, Dyllick, Gminder, & Hockerts, 2001; Hahn & Wagner, 2001; Dyllick & Schaltegger, 2001; Bieker, 2002; Figge, Hahn, Schaltegger, & Wagner, 2002a, 2002b).

A two-years research project "Sustainability Balanced Scorecard" (2000–2002), funded by the German Federal Ministry for Science and Education (BMBF), was carried out by two research teams of the University of Lüneburg (Center for Sustainability Management) and St. Gallen (Institute for Economy and the Environment). They pursued to develop the instrument and the methodology of the BSC towards a Sustainability Balanced Scorecard (SBSC) to operationalize corporate sustainability, in which some individual SBSCs have been set up to implement sustainability-oriented corporate strategies and measure the environmental and social performance.[6] The researches have drawn unanimous conclusion that the BSC has high potential to integrate environmental and social aspects into the core management system of companies (Bieker, 2002), but the difference presents itself on how to modify and improve the BSC to SBSC. Dyllick and Schaltegger (2001) and Figge et al. (2002b) present the SBSC as a tool for integrated and value-oriented sustainability management, and introduce an additional non-market perspective (environmental and social aspects) into the BSC. After giving a definition of "Corporate Sustainability", Bieker (2002) suggests a rather cyclically structured BSC model where "Society" is added as the fifth perspective to the traditional four perspectives, and further explains the mechanism of the SBSC and the cause-effect-relationships

[6]See the homepage of Institute for Economy and Environment at the University of St. Gallen (IWOe-HSG) at Hhttp://www.unisg.ch/org/iwo/web_archiv.nsf/18d08957e7711e48c12569f50045e851/af0f51dab5ad967ec12569f2003c7416?OpenDocument.

among five perspectives. Almost at the same time, KPMG[7] developed "Sustainability Scorecard" to move the gaps between the operative and strategic management, and borrowed the four perspectives of BSC to establish Environmental Performance Indicator and environmental Information and Reporting System (EnvIReS) (Fahrbach, Heinrich, & Pfitzner, 2000). Within another project funded by BMBF, Arnold, Freimann, and Kurz (2001) and Arnold et al. (2005) introduce a similar concept "Sustainable Balanced Scorecard" (SBS) and design the SBS-Matrix with 36 sustainability indicators in 12 fields to integrate the traditional BSC perspectives into the sustainability dimensions.

The previous two methods, EPE and strategic performance evaluation, especially their new styles, such as sustainability performance evaluation and SBSC, have made some valuable contributions to the development of new performance evaluation model in government in response to challenge of corporate social responsibility toward sustainable development. However, each has its own limitations. First at all, all of them pursue the objectives of corporate sustainability, and face the challenges of improvement and adaptation to fit the needs of the public sector. Hence, the New Public Management, which urges government to adopt both the "techniques" of business administration and business "value", will be introduced in next section.

2.3 New Public Management (NPM)

New Public Management (NPM) is one of the most widely discussed models for public sector reform since the 1980s. Although the shortcomings of NPM have continued to evidence themselves in subsequent studies, even Dunleavy, Margetts, Bastow, and Tinkler (2006) assert in their paper *New Public Management Is Dead – Long Live Digital-Era Governance* that this movement has now moved into the shadows of history, the effects of NPM are still working through in countries new to NPM, particularly because of the lag in transferring administrative knowledge and techniques from the developed world to developing regions (Haque, 2007). Therefore, the heyday of NPM hasn't passed yet, and it is still worthwhile to consider its origins and development, principles and value, weakness and reflection as guideline to public sector reform today, especially to the developing countries. However, "Government shouldn't be run like a business" (Denhardt & Denhardt, 2002). Precise and indiscriminative application of private sector value and management will not always work well in the public sector. Before adaptation, it is essential to modify and improve the business theories and methods considering the difference between the public and private sector. The purpose of this section is just to review its reform experiences and important lessons, which will provide some principles to improve and adapt the business methods to fit the needs of public sector, and then develop a new sustainability performance evaluation model in government.

[7] KPMG is one of the world′s leading auditing and advisory firms formed in 1987. See its homepage at https://www.kpmg.com.

2.3.1 Review of NPM Movement in the Past Two Decades

Since the mid-1970s, increasing pressures from both economic recession (including high rates of unemployment and inflation) and longstanding criticism of the quality and efficiency of public services promoted the change in government (Yamamoto, 2003). In the UK, the birthplace of NPM (McLaughlin & Osborne, 2002), Conservative Party led by Thatcher came to position of governing in 1979, and started a series of reform, for example: Efficiency Scrutinies, Next Step program, etc. (Lin, 2002). Next, the governments of New Zealand, USA and Australia joined the movement and brought a reform storm swept over the world since the 1980s, while these countries were facing the challenge of globalization and modernization to strengthen the nation's competitiveness. In the early 1990s, NPM was adopted by the Clinton Administration in the United States under the slogan of "reinventing government", which took shape in Vice President Al Gore's 1993 *National Performance Review* (Yamamoto, 2003). Their successes made NPM administrative reforms accepted by most OECD countries and other nations as well. Thus, the NPM came to the "autumn", when many governments have embraced the NPM as the framework or paradigm to modernize the public sector.

Since the 1990s, NPM principles have been gradually introduced in other countries through assistance programs set up by the international and supranational bodies such as the OECD and the World Bank (McLaughlin & Osborne, 2002; Yamamoto, 2003; Pollitt & Bouckaert, 2004), while it has largely been stalled or reversed in some key "leading-edge" countries (Dunleavy et al., 2006). The debate about the application of NPM in developing countries is still in its early stages (McCourt, 2002). The NPM enter the second spring in virtue of its divine vitality and applicability, as many countries in Asia, Africa, and Latin America are still in the process of pursuing its remaining elements (Haque, 2007). Some new industrial countries and developing countries, such as Korea, Philippines and China, began to show a special interest in it. During expanding to the new land, the NPM principles and value are developing continuously too, which will be introduced in the following texts.

2.3.2 Principles and Values of NPM

The term of NPM originally came from New Zealand (Schedler & Proeller, 2002), and was used widely at the beginning of the 1990s (Yamamoto, 2003; Haque, 2007) to describe public sector reforms throughout the world since the 1980s. Indeed, it isn't a systematic theory with a coherent analytical framework, but in general founded on a critique of bureaucracy as the organizing principle within public administration, which is plagued by progressive inflexibility based on complex hierarchical rule-based systems and top-down decision-making processes (Yamamoto, 2003). NPM has been inspired by a wide range of theories in two groups: one is "new institutional economics", built on public choice theory, principal-agent

theory, and transaction-cost theory, which views politics as a market phenomenon; the other is "managerialism", whose ideas concerning public sector reforms emanate from private sector or business administration (Hood, 1991; Yamamoto, 2003). Although the special mix of characteristics of NPM is new, NPM does not represent a paradigm change for the behavioral-administrative sciences but only an eclectic variety of some old theoretical perspectives in theory (Gruening, 2001).

In despite of the broad and complex theoretical basis, the guiding principles of NPM have basically been agreed among scholars. Hood (1991; Yamamoto, 2003) firstly elaborated the NPM framework of public sector reform, which can be summarized in the following seven doctrines:

(1) Emphasis on "hands-on professional management" skills for active, visible, discretionary control of organizations;
(2) Explicit standards and measures of performance through clarification of goals, targets, and indicators of success, preferably expressed in quantitative terms;
(3) Shift from the use of input controls and bureaucratic procedures to output (results) controls measured;
(4) Shift from unified management system to disaggregation or decentralization of units in the public sector;
(5) Shift to greater competition in the public sector so as to lower costs and achievement of higher standards through term contracts;
(6) Stress on private-sector styles of management practices by adopting the private sector management tools in the public sector;
(7) Stress on cost-cutting, efficiency and parsimony in resource use, and "do more with less".

Based on an empirical survey, OECD (1995) characterized the NPM as follows:

- Closer focus on results in term of efficiency, effectiveness and quality of service;
- Replacement of highly centralized, hierarchical organizational structures by decentralized management environments;
- Flexibility to explore alternatives to direct public provision and regulation that might yield more cost-effective policy outcomes;
- Greater focus on efficiency in the service provided directly by the public sector, involving the establishment of targets and creation of competitive environments within and among public organizations;
- Strengthening of strategic capacity at the center to guide the evolution of the state.

According to the authoritative definitions of OECD and Hood, considering the emphasis in this book, the principles of NPM are characterized as Market-, Result-, and Customer-orientation.

Market-orientation is the primary principle of the NPM, which is based on the main hypothesis that the introduction of market mechanisms, including technology and values, in the public sector will lead to greater cost-efficiency and high-quality public service in government (Zhang, 2004). NPM applies some private sector

management methods and tools to the public sector, such as privatization and contracting out to realize the disaggregation of traditional bureaucratic organizations and the decentralization of management authority, which downsize the public sector and redefine the relationship between the purchaser of services (citizen) and the provider of them (public organization). Thus, greater competition both between public sector organizations and between public sector organizations and the private sector is introduced in the provision of services to kill the inefficient monopoly franchise and improve the quality of public services through the use of multiple competing providers and term contracts (Yamamoto, 2003). Under this principle, efficiency is at the center of NPM's value, by means of constructing an entrepreneurial government and upgrading the nation's competitiveness.

Result-orientation is another central feature of NPM, which emphasizes the performance measurement with quantitative performance indicators. Before the NPM movement, because of the difficulty of measuring public service outputs objectively and because of the necessity for democratic control of the processes whereby public money is utilized, the inputs and processes had been stressed much more than outputs (Yamamoto, 2003). In order to improve efficiency and effectiveness of public service, most governments in developed nations now stress performance budgeting and performance management, representing a significant shift in public management from controlling inputs and rule-bounded procedures to achieving results measured in terms of outputs and outcomes (Haque, 2007). This change breaks up traditional input and process controls, and strengthens the accountability for outputs through the requirement for clear statements of goals, targets and indicators of success (Yamamoto, 2003). Performance evaluation in government, as discussed in the following chapters, is a public sector reform that is based on this principle.

Customer-orientation derives from the concept "customer satisfaction", which argues customer acceptance ought to be taken as their primary goal over profit. The NPM adopts this business management philosophy to regard citizen as customer who has multiple choices in a competitive market, whereas traditional public administration regards citizens only as service receivers who are unilaterally given limited choices by government (Yamamoto, 2003). This NPM principle involves an increasing emphasis on improving the quality of services, and determining how the institutions and organizations meet their responsibility and accountability, which reflects the tendency to pay equal attention to results, quality and citizen satisfaction of public service.

2.3.3 Critiques and Reflections of NPM

The book *Modernizing Government: the Way Forward* points out, to a certain extent, the public reforms in the past two decades have made public management in most OECD countries "more efficient, more transparent and customer oriented, more flexible, and more focused on performance" (OECD, 2005). Along with this kind of

positive comments, the critiques of its adverse effects and inherent limitations have been made too.

First of all, the NPM suffers criticism focusing on ignoring the fact that public management differs from private management in its essential nature (Yamamoto, 2003), which leads to weaken the responsibilities of the public sector and erode the traditionally collective values and ethics of civil servants (Schick, 1996). The introduction of market competitive mechanism improves the efficiency to a certain extent, but overlooks the "Market Failure", which is just the reason of appeal for the "public goods". So that, the NPM movement has damaged the public service while being ineffective in its ability to deliver on its central claim to lower costs per unit of service (Hood, 1991). Moreover, the relationships among the public organizations emphasize the inter-organizational cooperation and coordination but not only competition, even perhaps the distinguishing feature of public management is that good results depend on cooperation among many organizations with interdependent functions (Metcalfe & Richards, 1990).

Furthermore, the NPM is criticized for focusing on managerial results, and seeking for the economy, efficiency and effectiveness of public service, but neglecting the achievement of public sector's mission and long-term objectives that meet the real needs of the public. The performance management and evaluation pay too much emphasis on results-based performance against the pre-determined quantitative objectives, while the monitoring and evaluation of public activities have had to focus more on the achievement of non-financial goals (Lawrie, Kalff, & Anderson, 2005). Jones (2004) criticizes the NPM's emphasis on performance measurement and lack of balance in the range of indicators used: the linking of budget to output leads to the pursuing of output quality targets, while many of the outputs and outcomes are not suitable for precise and accurate measurement; and some basic principles of service delivery may not be given, such as, impartiality and fairness, which are due consideration in output measurement and assessment but not measurable.

A final major criticism is that NPM compares the citizen to "Customer". One of the peculiarities of being customers is the freedom to choose whether to buy a service or not and which service provider to buy from, while sometimes citizens are forced to buy services provided by public administrations that operate in a monopolistic environment (Bocci, 2005). Besides, this inappropriate metaphor simplifies the relationship between the government and citizens, while the citizens play a multiple role: they are the customers to purchase the public goods, as well as the owners or partners of the government. This simplification garbles the political meaning of "Citizen", which may result in the adverse impacts on accountability and democracy.

Since the 1990s, public sector reforms have therefore had to go beyond simply acknowledging that there are fundamental differences between the public and private sectors; instead, as far as possible, the public sector has had to follow the "best practice" model of private sector management (Yamamoto, 2003). Some new models try to perfect or replace the NPM, among which the "New Public Service" stands out. After reviewing and criticizing the mainstream models of the old public

administration and NPM rooted in the idea of rational choice, Janet V. Denhardt and Robert B. Denhardt suggest the theory "New Public Service", which is based on the theories of citizenship, community and civil society, organizational humanism, NPM and postmodernism. This new model redefines the position of citizens in the framework of governance, and emphasizes the transformation of government's function from "Steering" to "Serving". The principles of the "New Public Service" are outlined in this way (Denhardt & Denhardt, 2002, 2003):

(1) The function of government is "Serving" rather than "Steering": the primary role of the public servant is to help citizens articulate and meet their shared interests rather than attempting to control or steer society in new directions.
(2) The goal of public administrators is to seek the public interests and shared responsibility, but not to find quick solutions driven by individual choices.
(3) Think strategically, act democratically: the processes of collaboration and shared leadership based on respect for all people will facilitate the long-term success of public organizations and the networks.
(4) The government serves citizens, not customers: public servants should focus on building relationships of trust and collaboration with and among citizens.
(5) The recognition of accountability isn't simple: besides the market, public servants must also attend to statutory and constitutional law, community values, political norms, professional standards and citizen interests.
(6) Value people, not just productivity: policies and programs meeting public needs can be most effectively and responsibly achieved through collective efforts and collaborative processes.
(7) Value citizenship over entrepreneurship: the public interest is better advanced by public servants and citizens committed to making meaningful contributions to society than by entrepreneurial managers acting as if public money were their own.

The NPM was in general founded on a critique of bureaucracy based on complex hierarchical rule-based systems and top-down decision-making processes (Yamamoto, 2003). However, when it pursues the managerial efficiency of public administration by borrowing the tools and value rooted in the for-profit sector, the inappropriate metaphor garbles the political meaning of "Citizen", which causes public service to become increasingly distant from citizens' expectations. Reviewing the history of public sector reform in the past century, from the old public administration to NPM and then the New Public Service, the emphasis waggled between two polarities of the public values: efficiency and equity. Every new concept tried to correct the weakness of the old system with explicit and unhesitating rejection, while going from one extreme to the other (Xu & Zhang, 2006; Chen, 2007). Chasing the balance between the two polarities, the public administration and management develop themselves continuously. Indeed, an amalgamation of diverse thoughts can be tracked in this history too: from 3 E's to service quality and 5 E's, the efficiency and equity are beginning to integrate into one system in a balanced manner (Chen, 2007). To realize the multi-objectives of pubic service, a multiple approach should

be applied, including managerial improvement and citizen participation. According to the New Public Service, the processes of collaboration and citizen participation in the strategic planning and implementation process will ensure the long-term success of public sector, so that participatory approach will be given special attention in this book, and be adopted in the current performance evaluation system in government to balance the overemphasis on managerial performance.

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Chapter 3
Fundamentals of Sustainability Performance Evaluation System in Government

Abstract Before determining what it needs to improve, it should be clear where and why its current performance falls short, which are formulated to three "Strategic Gaps" firstly in this chapter. Aiming at those gaps, a three-dimensional conceptual framework is built up in two steps, which lays the foundation to develop a new system of "Sustainability Performance Evaluation System" (SPES) in Government. Subsequently, some fundamental elements of SPES in government will be outlined including the definition, objective, scope, standard and process, which form a system to explain "what" and "how" to develop a new performance evaluation model of sustainability management in government. This chapter thus outlines the basic framework for the book, and gives directions to the further study in the following texts.

Keywords Strategic gaps · Sustainability performance evaluation system · Pubic accountability · Citizen satisfaction · 3 E's · 5 E's

3.1 Conceptual Framework of Sustainability Performance Evaluation in Government

To develop a new system, it is necessary to determine "what it needs to improve" or "where you would like to be in the future", and then the results are used to create a set of actions so that the "gaps" are filled-in and the goals become realized. Thus, this section begins with a gap analysis and formulates the current problems of performance evaluation in government into three "Strategic Gaps" by tracking and analyzing the development of evaluation systems in government within the context of public sector reform. And then, a three-dimensional conceptual framework of SPES is built up, which is based on three theories introduced in Chapter 2: EPE, Strategic Performance Evaluation and NPM. The three "Strategic Gaps" will be comprehensively described in this section, because they are important not only in this chapter but also for the whole book.

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3.1.1 Performance Evaluation and Strategic Management in Government

Evaluation, just as its name implies, means an act to ascertain or fix the value or worth. Undertaking in resource-limited settings, human should give a more correct price to the goods and service, so that they can compare within the alternatives and make the rational decision to get the maximal benefit. This kind of evaluation activities have been conducted for 1000 years as one of the human rational behaviors. Because this research is about performance evaluation system in the public sector, a brief review of evaluation history in the administration field will be greatly helpful to understand the past and today, and then imagine the future.

3.1.1.1 A Brief History of Evaluation in the Administration Field

Although its historical roots extend to the seventeenth century (Freeman, Rossi, & Lipsey, 2004; Van Dooren, 2006[8]), widespread systematic evaluation research began in the early twentieth century (Williams, 2002, 2003, 2004; MOFA, 2003; Freeman et al., 2004; Zhu & Zhang, 2005). Developments such as the social survey, municipal statistics and modern cost accounting in the late 1800s paved the way for the New York Bureau of Municipal Research to introduce modern empiricism into political science and develop performance measurement between 1906 and 1912, which is the first extended implementation of prototypical performance measurement practices (Williams, 2002, 2003, 2004).

In their book *In Fourth Generation Evaluation*, Guba and Lincoln (1989) present a monumental four-generational shift of evaluation practice in the last century, that is, evaluation passed through measurement, objective description and decision-oriented generations and went toward program evaluation. Based on two famous theories of Geert Bouckaert and Nicholas Henry, Zhu and Zhang (2005) argue that American government performance measurement can be divided into three historical periods: burgeoning period (1900–1940), performance budgeting period (1940–1980), and full development period (1980–2000). All of the theories outline the development history of evaluation from different viewpoints, which indicate its various characters in different environment. In general, evaluation past through two phases: pre- and post-World War II. Before the Second World War, evaluation was in the classical or gestation period and efficiency was the central value of public administration; while the systematic evaluation of social programs entered the boom period in evaluation research after World War II (Freeman et al., 2004). This book will focus on the second period of evaluation as an analytical procedure to assess the public policies, programs and measures in the context of public sector reform

[8] A doctoral research of Van Dooren (2006) casts back the relevant movement of Political arithmetic developed in Britain in the seventeenth century and German University Statistics in eighteenth century.

after World War II. Of course, a review and comparison of the first period will also be taken in this work.

Evaluation emerged as a distinct area of professional practice in the post-war years in North America. Three strands, which already defined some of the main evaluation traditions that continue to this day, were the evaluation of educational innovations, linking evaluation with resource allocation and anti-poverty programs (e.g. the Great Society experiments of the 1960s). Since the 1970s onwards evaluation began to take root in different European countries and other parts in the world, but often with distinctive traditions and emphases (Tavistock Institute et al., 2003). According to the definition of Scriven (1991), an evaluation is the process to determine the worth, merit, or value of something, particularly in the professional evaluation of products, program, policies and performance. When properly applied, evaluation can help make the complex and uncertain situations manageable and measurable by collecting and analyzing information, establishing the feedback systems and improving planning and implementation. Due to the close inter-linkage between the public sector reform and evaluation throughout the past 30 years or so, Wollmann (2003a) argues that roughly three phases in the development of policy evaluation can be distinguished in international perspective: the first wave of evaluation "Planning Era" during the 1960s and 1970s; the second wave beginning in the mid-1970s for budget retrenchment and cost efficiency; and the third wave related to the widespread of NPM movement in the world. In this section, evaluation in administrative field in the postwar time will be divided into three similar phases as follows.

First Phase: Planning Period

After the Second World War, some researchers began to reassess and question the principles of classical public administration, nevertheless, governmental reformers continued to follow the Progressives' ideals and classical theory during this time, while the advocates of the neoclassical public administration focus on analysis and a shift from a bureaucratic management style toward a more rational and analytical one (Gruening, 2001). During the 1960s and 1970s, the advent of the advanced welfare state required the modernization of its political and administrative structures to enhance the state's capacity for "proactive policy making" (Wollmann, 2003a), which made the institutionalization and employment of planning process strategically important. The main practical example of this period is the invention and implementation of the "Program, Planning, and Budgeting System" (PPBS) in USA, which introduced a decision-making framework with the help of systems analysis to integrate the budget and programs with the long- and short-term plans and goals, in order to increase the rationality of planning (Tyack, 1995). Although it failed because of serious shortcomings, such as, a lack of appropriate data systems and the complexity of analysis required, PPBS left a long-standing legacy of increases in the amount and quality of program evaluation in the federal government (GAO, 1997). Gruening (2001) argues, the whole branch of output-oriented evaluation in this phase shows heavy influences of PPBS, and the whole language now used in

this area-inputs, outputs, outcomes, products, programs, alternatives-was invented in the wake of the PPBS.

Evaluation in this phase, as a "cybernetic" loop of "policy cycle", meant to improve policy results and to maximize output effectiveness by gathering and feeding back information relevant to policy-making (Wollmann, 2003a). In this period, the government began to enact and create the special institutions to conduct the evaluation. The evaluation of federal government program by the US General Accounting Office (GAO) in the late 1960s could be a pioneering attempt. The main purpose was to evaluate and report the findings about the effectiveness and extent of the target achievement of government programs to the Congress and the public to pursue the accountability of the government. Having learned from the failure of the PPBS, program evaluation by the GAO emphasizes the ex post facto study and measurement of actual effect (output) of programs rather than prior estimation of program effects (MOFA, 2003).

Almost at the same time, Canada and Sweden applied the PPBS and evaluation into their governments or departments (Barrett, 2001; Leeuw, 2003). In the late 1960s, PPBS was widespread in Europe and became an integral tool of national economic planning by the early 1970s (Van Dooren, 2006). Germany was a frontrunner in this period of evaluation. During the significant administrative reforms "Planning era" of the 1960s and 1970s, the policy evaluation was introduced as an essential modernization tool and a standard operational procedure in policy-making, and the German administration has gained the national and international reputation of excellent performance by international standards (Wollmann, 2003b).

Second Phase: Budgeting Period

According to Wollmann (2003a), the worldwide economic crisis triggered by the first oil price shock of 1973 led to the need for budgetary retrenchment and cost efficiency since the mid-1970s. In consequence, the mandate of evaluation in this phase was redefined to reduce welfare-state policies and maximize input efficiency, and evaluation turned to cost-reducing procedures such as cost-benefit analysis and task scrutinizes. From a developmental perspective, this phase was the "Budgeting Period" of evaluation, in which evaluation grew to be a budgeting control tool to achieve reduction of programs.

A noteworthy advance in this period is the emergence of NPM movement in the UK under Prime Minister Margaret Thatcher that had suffered most heavily from economic recession and tax revolts (Gruening, 2001), which has twofold objectives: to cut budgets and to improve the efficiency and effectiveness of government bureaucracy through deregulation and the privatization of public assets (Van Thiel & Leeuw, 2002). However, evaluation in this period emphasizes the cost-efficiency but gives less attention to the service quality and citizen attitude (Zhu & Zhang, 2005). In this sense, it is just a transition toward the full-development period of evaluation. That is, this phase, as a transitional stage connecting the preceding "Planning Period" with the following phase when the NPM movement is widespread in the

world, emphasizes the cost reduction and administration efficiency by budgeting control.

Third Phase: Performance Period

Since the 1980s, the NPM extended worldwide and a number of key OECD countries under governments of different political stripes shifted to the NPM (Hood, 1995). As mentioned in Chapter 2, the NPM shift its focus from the use of input controls and bureaucratic procedures to output (results) controls in term of efficiency, effectiveness and quality of service (Hood, 1991; OECD, 1995). To answer for the result-orientation of NPM, since the 1990s there were a strong move towards the introduction of Result-Based Management (RBM) in government, which is a new management strategy focusing on performance and achievement of outputs, outcomes and impacts (OECD, 2002) and manages the activities of organizations by setting clear targets and verifying the achievement with performance and results. The RBM (or performance management[9]) was employed by the governments of USA and Canada firstly and then introduced to other OECD countries. The *Government Performance and Results Act* (GPRA), signed by President Clinton of USA in 1993, is a typical example of RBM in public sector, which requires all agencies develop and implement an accountability system based on performance measurement, including setting long-term goals and annual performance objectives, and measuring progress toward achieving them (Niven, 2003). GPRA attempts to establish a new framework for performance management by linking budget levels with expected results, so that spending decisions can be better aligned with anticipated performance (McMurtry, 2005). Therefore, evaluation stepped onto a new stage "Performance Period".

Approaches to performance evaluation have progressed furthest in countries that have been frontrunners in public management, such as in the UK and New Zealand. Along with the devolution of authority and decentralization of the public sector, "Value for Money" has become an important aspect of public management (Barrett, 2001). As a conspicuous latecomer of the international NPM practice, the Federal Republic's intergovernmental administrative system in Germany has some constitutional and institutional peculiarities and good reputation of administrative reform, which might be interpreted by that some crucial NPM conditions have already been put in place. In the early 1990s, the employment and direction of evaluation was given a new push and focus while the dramatic shift and overturn to NPM with the New Steering Model as its German offspring was triggered largely by budgetary problems arising from the financial costs of German unification and from the need to meet the budgetary parameters set by the Treaty of Maastricht on the EU (Wollmann, 2003c).

[9]In the third phase "Performance Period", performance management is synonymous with Result-Based Management (RBM).

3.1.1.2 Trends of Performance Evaluation as Strategic Management Tool

In search of the trends of evaluation between 1965 and 1990, House (1990) suggests that evaluation changed both the structural basis and conceptual underpinnings: structurally, it becomes more integrated into organizational operations; and conceptually it moves from monolithic quantitative methods to pluralist notions, to multiple methods, criteria and interests. Wollmann (2003c) argues, "the most striking and salient common trend can be seen in the new conceptual focus, strategic emphasis and institutional gravity of the goal-oriented, performance-related and result-based conduct of the administrative activities and operations." Van Dooren (2006) thinks the most notable evolution is the increasing integration of measurement in the core of the public sector. After reviewing the evaluation in the public sector after the Second World War, three trends and characters can be tracked down throughout history.

Integration of Performance Evaluation into Strategic Management System

The development of evaluation in the three periods shows that the evaluation phased in the core of public administration within the context of public sector reform: from the instruments of planning to financial control tool, and then entered the management fields and became the management control tool. For example, in USA, from the First Hoover Commission's recommendations "performance budgeting" to PPBS and GPRA 1993, a series of initiatives in the last 50 years attempt to link plan, budget and performance, so that spending decisions and public program can be better aligned with mission and strategy, which meet the needs of public. Within the framework of RBM, which is intended to help the manager of an organization become better informed about the delivery of key organizational goals (Lawrie, Kalff, & Anderson, 2005), performance evaluation is being developed as a control tool that emphasizes the strategic importance of performance management and integrates the performance with the strategy of the organization by permanently monitoring and reporting the results of the strategic implementation (Wollmann, 2003c). That is, performance evaluation is being integrated into a strategic management system in government, which reflects the demand of the NPM movement: transforming the public sector from a rule-bound bureaucracy to a result-orientated organization that responds to the needs of the public.

Clarification and Extension of the Evaluation Scope

The main principles of NPM include the clarification of authority and responsibility scope for each administrative activity with the help of evaluation in order to check and ensure the accountability (MOFA, 2003). With the integration of evaluation into the core management system in government, the evaluation expands the range from financial to non-financial measures, in order to meet the requirements of the public non-financial goals. The evolution of administrative system in USA in the past 50 years shows us a clear tendency of evaluation scope extension. In the 1960s, the PPBS attempted to change the budget concept from pure input to

output-oriented budgeting (Jann & Reichard, 2003); in 1973, President Nixon initiated "Management by Objectives" (MBO) to hold agency managers responsible for achieving stipulated "outcomes"; "Zero Base Budgeting" (ZBB) in 1977 required agencies to set priorities by linking directly the expected program results with the level of spending (McMurtry, 2005); the GPRA provides a new focus on "result", which contains "impact" (positive or negative, directly or indirectly, intended or unintended, primary and secondary long-term effects produced by a development intervention) besides output and outcome (OECD, 2002). Eichhorn (2002) argues that the evaluation scope extended from input to impact, while evaluation objective developed from operational efficiency to effectiveness.

Diversification and Systematization of Evaluation Methods

The evaluation method developed itself from the simple quantitative analysis to multiple and systematic methods, along with the development and evolution of management theories and methods. Since the 1960s, policy makers and researchers applied the logic of systems analysis to create a conception of "rational policy making" with a circle of information gathering, analysis, decision, implementation and evaluation, which reflect the influence of public management: transition from bureaucratic to rational management styles (Gruening, 2001). One of those widely used management tools since the 1970, Logical Framework (or LogFrame),[10] provides a one-page summary of the causality between the activities and results as the means of planning and performance evaluation, while the RBM derives from Logical Framework and inherits this "strategic logic" (Lawrie et al., 2005). The performance evaluation, as one part of RBM cycle (including planning, implementation and evaluation), provides the information about the efficiency, effectiveness and impact of public policies and programs by measuring the results against preset targets and objectives. For example, in USA, in order to meet the requirement of GPRA 1993, the departments and agencies must submit 5-year strategic plans including the mission, long-term goals and performance objectives, which will be employed for both strategic management (planning) and evaluation of results (scorekeeping) (Kravchuk & Schack, 1996). This performance evaluation approach, emerged as the one part of the rational oriented public management system by emphasizing the objective measurement of comparing preset objectives with documented results (Gruening, 2001), will surely bring a "systematic and objective assessment".[11]

[10]The definition of Logical framework (Logframe) by OECD: a management tool used to improve the design of interventions, most often at the project level. It involves identifying strategic elements (inputs, outputs, outcomes, impact) and their causal relationships, indicators, and the assumptions or risks that may influence success and failure. It thus facilitates planning, execution and evaluation of a development intervention (OECD, 2002)

[11]The OECD's definition of "Evaluation" on the context of result-based management is "the systematic and objective assessment of an on-going or completed project, program or policy, its design, implementation and result". The aim is to provide information that is credible and useful, enabling the incorporation of lessons learned into the decision-making process of both recipients and donors (OECD, 2002).

3.1.1.3 "Strategic Gap 1" of Performance Evaluation in Government

After reviewing the history and general trends of the performance evaluation in government, an outline of performance evaluation has been drawn, while some gaps between ideal and actual situation can be seen too. When integrated into the strategic management system as the control tool, performance evaluations should not only provide information on whether the strategy is being implemented, but also have the responsibility to promote behaviors to be consistent with the strategy and mission of organizations (Neely, 1999). However, the current performance evaluation focuses on the management control and goal attainment but pays less attention to control the strategy planning and objective formulation. Anthony (1965) thinks there is little need for a control system that drives strategic content, because the separate function of strategic planning can be informed by management control information but crucially not be driven by it. However, some researchers believe that this approach brings on the separation of strategic planning and management control and advanced a concept "strategic control" to bridge this gap (Cobbold & Lawrie, 2002). The standpoint in this book is against the Anthony's opinion and for the necessity of strategic control. Obviously, "If you can't measure it, you can't manage it." Performance evaluation should play a new role as a strategic control tool to provide information about input and strategic planning process.

As shown in Fig. 3.1, the strategic management consists of two steps: the first is strategic planning, which formulates and determines the strategy and objectives according to the mission of organization and following the strategic logic framework; the second process is strategy implementation, which leads to the final results. The current performance evaluation approach just focuses on the comparing the results with the preset objectives to make judgments about the level of goal attainment. This kind of evaluation is a rational approach to identify the goal attainment efficiently and effectively, when the objective can reflect the mission of organizations correctly and totally. But a risk can be found in this process. Once something wrong happened during the strategic formulation so that the decided objectives deviate from the mission of the organization, the management activity that implements the strategies and objectives won't meet the mission of the organization, though the

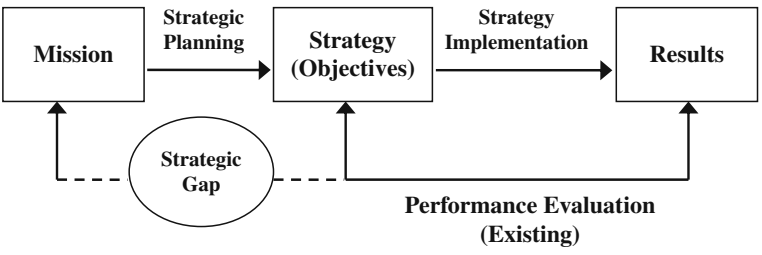

Fig. 3.1 Strategic Gap of Current Performance Evaluation Approach

results fulfill the objectives perfectly. Therefore, the rationality of strategic planning and objective formulation is so crucial to the efficiency and effectiveness of management performance that it should be under control. Whereas the current approach, relating the results to the pre-determined objectives and encouraging the consistency between behaviors and mission indirectly, can only ensure that the organization carries out its strategies effectively and efficiently. It does nothing to enable the performance or results to answer for the mission and strategy of organizations directly. So, there is a gap of existing performance evaluation between mission and strategy/objectives.

In this research, "Strategic Gap" (SG)[12] will be borrowed to name this gap. Considering this limitation of existing performance evaluation, emphasizing on result control but neglecting the process control of strategic planning and capability-building program may cause the immeasurable risk of the organizations in the future. When the sustainable development was accepted as a national strategy, it is especially essential to ensure that the sustainable development strategy can be translated into actions, while the current performance evaluation overlooks the steps to supervise the strategic planning which integrates the long-term strategy and short-term performance objectives with budgeting. This SG should be given sufficient attention. Furthermore, in the following text, SG will be used to describe some other limitations of performance evaluation in government under the background of NPM movement and sustainable development. Thus, this SG is numbered "1" in sequence.

Strategic Gap 1 (SG 1): Current performance evaluation system focuses on measuring the achievement of preset objectives and targets, but pays less attention to strategic control of translation and formulation of the strategy "Sustainable Development" to administrative objectives and plans.

As an illustrative instance at departmental level, over the past several years, the managers and staff in United State Environmental Protection Agency (US EPA) have focused on defining the environmental and human health protection goals and improving their managing performance to achieve those results. As a part of its effort to "manage for results", the existing evaluation system focuses on achieving the objective, that is, to measure the actual program performance achieved by comparing with the performance indicators established in the Agency performance plan. The EPA's annual performance report required by GPRA of 1993 reflects the performance goals against the expected effectiveness to be measured in any given fiscal performance year (US EPA, 2005a). Even though EPA continues to look for ways to improve its planning and priority-setting, and begins to conduct an internal evaluation to assess the effectiveness of planning improvements by interviewing

[12]"Strategic Gap" is referred to the disconnection between the long-term goals and short-term budget plan, where should require a series of logical, achievable, sequential steps. These missing steps will be a threat to the future performance, even survival of an organization (Coveney, Ganster, Hartlen, & King, 2003). In order to close this gap and achieve "we do what we planned to do", strategic planning will be required to integrate the long-term strategy and short-term performance objectives with budgeting.

within the Agency (US EPA, 2005b), the performance evaluation still hasn't aimed at the strategic planning process, that is, the SG of evaluation is still in existence. Moreover, due to the pressure of budgeting constraint, EPA had to integrate planning with budgeting to improve the ability to assess EPA's program and financial performance and helps to adjust program strategies and make sound budget decisions.

3.1.2 Performance Evaluation and National Sustainable Development Strategies

To implement the strategy sustainable development at a national level, *Agenda 21* called for all countries to develop national sustainable development strategies (NSDS) as mechanisms for translating a country's goals of sustainable development into concrete policies and actions (UN DESA, 2002). In addition, integrating the principles of sustainable development into country policies and programs is one of the targets in the *United Nations Millennium Declaration* (2000) to achieve the goal of environmental sustainability.[13] In 2002, the World Summit for Sustainable Development (WSSD) urged states to take immediate steps to make progress in the formulation of national strategies for sustainable development, and begin their implementation by 2005. So far, sustainable development has been accepted as a national development strategy in most developed countries and some developing countries, as shown on the map of *National Sustainable Development Strategies: The Global Picture* (UNDSD, 2008) (see Appendix A). Under this background, "Sustainable Development" prompted a fundamental change of decision-making mechanism and the public administration system in government.

3.1.2.1 Challenge of Sustainable Development as National Strategy

According to the definition of sustainable development by the Brundtland Commission, development for satisfying human needs and improving the quality of human life must be based on the efficient and environmentally responsible use of all of society's scarce resources – natural, human, and capital. So, in planning for development, there must be deliberate consideration of how to maintain the quality of the environment, human well-being and economic security at the same time. In other words, sustainable development with multiple objectives is linked to its economy, environment and social issues by taking into account this interconnectedness in planning for the future. Policy makers are thus confronted with the hard decisions of establishing the right balance between three-dimensional goals of sustainable development, while areas of tradeoffs, where benefits in one or more spheres may result in losses in another sphere, need to be determined and appropriate measures should

[13] See the homepage of UNCSD http://www.un.org/esa/sustdev/sdissues/decision_making/decision_making.htm .

be taken to minimize the negative impacts (UN DESA, 2002). It implies that the emphasis should be on the synergetic "win-win-win" options and trade-offs among these three dimensions in order to minimize possible conflicts (OECD, 2000).

Over the last decade, sustainable development has become a key goal of public policy. A number of governments charted a new way of doing business, because they recognized that responsibility for sustainable development is shared across government and that each department is accountable for integrating sustainable development into their policy development, planning and decision-making.[14] Even though nations are only at the early stages of learning toward effective strategic and coordinated action for sustainable development, the innovations can be seen in many of the countries and in all aspects of the sustainable development strategy process, including leadership, planning, implementation, and monitoring and learning. For example, some countries (e.g. Mexico, Philippines and India) have directly integrated sustainable development principles into its existing national development planning process and even the budget process (Swanson, Pintér, Bregha, Volkery, & Jacob, 2004).

Influenced by the NPM movement, the public has become much more demanding about accountability and receiving quality services in return for tax dollars, so that the governments are increasingly being treated as one of private parties that are responsible for the foreseeable consequences of their actions under sustainable development proceedings and face a growing challenge of communication and reporting (Newcomer, Hatry, & Wholey, 1994). When the people's awareness of the responsibilities of all levels of government is focusing on the environmental issues and the cost of developing and implementing environmental policies and obligations, the public scrutiny from individual citizens or groups, financial and control departments has increasingly given attention to the accountability for environmental issues (INTOSAI WGEA, 2004a). However, the review of the strategy development experience in the last decade suggests that most strategies have put little emphasis on M&E, because some countries accorded low priority importance to M&E while others lacked the institutional mechanism, capacity, and culture to use M&E as a tool for improving the implementation of the strategy (UN DESA, 2002). Therefore, the performance evaluation, as a key element of modern public management, is increasingly significant to be improved toward sustainability performance evaluation in government, especially when sustainable development was integrated into the sectoral strategic planning process.

3.1.2.2 Actual Performance Evaluation Regarding Sustainable Development

Around the time of the Johannesburg Summit 2002, a parallel event was convened by the International Organization of Supreme Audit Institutions (INTOSAI) on "how will we ensure that governments deliver what they promise", which tried to

[14] See "What is Sustainable Development? ", from the homepage of SD info: http://www.sdinfo.gc.ca/s1_e.cfm .

broaden the scope of the auditor institutions and to undertake the audit related to sustainable development. And then, INTOSAI published the guidance documents *Sustainable Development: The Role of Supreme Audit Institutions* (2004b) and *The World Summit on Sustainable Development: An Audit Guide for Supreme Audit Institutions* (2007) to promote the monitoring national commitments and progress towards sustainable development (INTOSAI WGEA, 2004b, 2007). However, the performance evaluation on sustainable development in government still stays in the beginning phase, even though innovations can be seen in some countries. For the most countries, according to the research on NSDS in 19 countries by IISD, the strategy processes have institutional grounding in the environmental departments, which still take responsibility for coordinating the development of the sustainable development strategies or chair the inter-departmental committees in many countries, but lacking the extent of influence across government (Swanson et al., 2004). Some approaches of EPE have been developed and carried out in many countries, but they are only considered as a subsystem of the traditional performance evaluation in government and focus on the eco-efficiency of public environmental management. Moreover, owing to the budget constraint and the difficulties associated with the issue of data quality and accessibility, in practice, the environmental strategic objectives still focus on the financial performance and regularity compliance.

For example, the EPA's *Fiscal Year 2005 Performance and Accountability Report* (US EPA, 2005a) shows that the purpose of the report is to "provides the performance and financial information that enables the Congress, the President and the public to assess the progress EPA is making in achieving environmental results – improving the quality of air and water and preserving and protecting the land – and using the taxpayer dollars efficiently and effectively. This document also satisfies reporting requirements of the following legislation: . . ." In short, this report will provide information about environmental results, financial performance and regularity compliance. In China, where the national strategy of sustainable development focused on economic development and began to give attention to the environmental protection and resource conservation (see Chapter 5), the State Environmental Protection Administration (SEPA), which major responsibility is formulating and implementing policies and regulations to take nature ecological conservation and control environmental pollution, conducts the environmental impact assessment entrusted by the State Council on major economic and technical policies, development programs and major economic development plans (SEPA, 2004). The performance evaluation of SEPA carried by the national audit office (as internal audit institution) pays main attention to financial performance and compliance issues (Liu, Wang, & Chen, 2002). In Germany, the progress report delivered every 2 years by the government provides a SDI-based monitoring system based on the 21 sustainable development indicators, but there is no external, independent monitoring of sustainability performance. The functions of the Bundesrechnungshof (Supreme Audit Institution of the Federal Republic of Germany) is just to audit the environment and nature resource issues related to a number of major government

departments, focusing on the account and performance, regularity and compliance of financial management (Bundesrechnungshof, 2005).

In short, for the most countries, the current performance evaluation on sustainability performance in government still stays in the early phase focusing on economic and environmental dimensions. And environmental performance evaluation is normally considered as a subsystem of the traditional performance evaluation system reported to congress and the public, emphasizing particularly on budget cutting and regulation compliance. Due to the pressure of budgeting constraint, the compliance of financial regulation is still the most important objective of the existing performance evaluation in government, and the evaluation findings are valuable to support and to influence budget decision-making. Long with the understanding of the concept sustainable development evolved over time from the early focus on environmental dimension to the current emphasis on sustainable development that integrates economic, social and environmental objectives, the performance evaluation of sustainability management in government should develop from the eco-efficiency to three-dimensional sustainability, but there is still a long way in the future.

3.1.2.3 "Strategic Gap 2" of Performance Evaluation in Government

After the review of the development of NSDS and sustainability management in government, another gap between the requirement of sustainable development strategy and the practice of performance evaluation in government emerges: on one side, the meaning of sustainable development developed from environmental dimension to integrated three-dimensional objectives; on the other side, the performance evaluation still focuses particularly on budget cutting and regulation compliance related to economic and environmental dimensions in general.

Since the Rio Earth Summit in 1992, the understanding of a sustainable development strategy has moved from a national environmental strategy to a strategy that integrates economic, social and environmental aspects. In 2001, a *UN International Forum on National Strategies for Sustainable Development* agreed guidance on NSDS, which confirms that sustainable development has three principal dimensions: economic growth, social equity and protection of the environment. According to the guidance, a sustainable development strategy is defined as a process of thoughts and actions to achieve economic, environmental and social objectives in a balanced and integrated manner at the national and local levels (UN DESA, 2002). Therefore, one function of performance evaluation is to provide comprehensive information about the positive and negative impacts resulting from changes of economic, social and environmental policies. On the other hand, most national initiatives are still driven by environmental actors, with the result that environmental indicators, complemented with selected economic indicators, still form a major part of sustainable development indicators. Even though social aspects began to catch general increasing attention, and there is also considerable interest in indicators that better reflect the linkages between the three dimensions of sustainable development (OECD, 2000), the research for the 19 countries illustrated that only a few countries

have developed an integrated set of indicators to allow analysis of the inherent trade-offs and inter-linkages between the economic, social and environmental dimensions of sustainable development, while most nations have a number of independent statistical offices that monitor separated aspects of our economy, society and environment (Swanson et al., 2004).

Obviously, there is still a long distance between the integrated principles of three-dimensional sustainable development and its practice of performance evaluation in government. That is, in general, the performance evaluation in government haven't included the three-dimensional objectives of sustainable development in balanced and integrated manner virtually, so that it can't provide comprehensive information to the policy-makers and the public, probably leading to the unbalance among the dimensions of sustainable development and even uncertain strategic risks in the future. Following the concept of SG in the foregoing text, this limitation of current performance evaluation in government is named as "Strategic Gap 2".

Strategic Gap 2 (SG 2): Current performance evaluation system focuses on the financial and/or environmental performance, but pays less attention to integrated "Sustainable Development" objectives that encompass social, economic and environmental performance in a balanced manner.

3.1.3 Two-Dimensional Conceptual Framework and "Strategic Gap 3"

To close the two SGs, some private sector management mechanisms and tools may be helpful, according to the market-orientation principle of NPM. Aiming at the problems facing to the profit sector concerning corporate sustainability, which are similar with the public sector, those methods introduced in Chapter 2, EPE and strategic performance evaluation, show us the possibility to move the SGs and improve the administrative efficiency in the public sector. In this section, a two-dimensional conceptual framework of "Sustainability Performance Evaluation" (SPE) is built up to close the SG 1 and 2 of performance evaluation in government firstly. And then, considering the applicability of SPE launched firstly in profit sector and limitations of NPM, the third SG emerges, which will emphasize the rectification of the NPM and the citizen participation.

3.1.3.1 Two-Dimensional Conceptual Framework

To close the SG 1, some researches on "Strategic Performance Evaluation", which tries to tie performance evaluation to the organization's strategic planning process, can be used to extend the evaluation scope from the results to the determinants. This approach reflects the need for performance measurement to support the process of strategic planning (Atkinson & McCrindell, 1997). To bridge the second SG, the environmental strategic objectives should extend to the three-dimensional sustainability, in which not only environmental and economic, but also social performances are coming up for evaluation. Due to the limitations of ISO 14031, some researches

suggest to improve the EPE to the new phase to evaluate the business sustainability including social dimension. The third-generational EPE of Bennett and James and "Sustainability Performance Evaluation" proposed by Dias-Sardinha et al. are examples of the solutions of integrated evaluation approaches containing three performance components.

Moreover, a combination of BSC and ISO 14031 can be tracked during the development of SPE at present. When the EPE developed to the "third-generational EPE" and "sustainability performance evaluation", the BSC, as one successful tool of strategic management, has been adopted to improve the traditional EPE to achieve long-term sustainability. At the same time, the BSC was improved to the "Sustainability Balanced Scorecard" (SBSC), which contains the environmental and social objectives to seek for the corporate sustainability. In fact, BSC works well as a tool to identify indicators and measures of sustainable management, but it does not address any specific, structured and step-by-step process for performance evaluation (Coelho, 2005), while ISO 14031 offers well-structured process and practical indicators system of environmental issues. So, the two methods can learn from each others' strong points to offset own weakness, that is, ISO 14031, with the help of BSC, will be extended from a model of EPE to SPE covering social, economic and environmental issues, or the BSC is improving into "Sustainability Balanced Scorecard" to contain the field of environmental and social perspectives.

Thus, the trend of integration EPE with the Strategic Performance Evaluation gives us a suggestion to fill the SG 1 and 2 at one time: ISO 14031 as a platform with the systemic structure and indicator set, and the BSC providing the framework to extend the objectives and measures from the results to the determinants, can be combined together to build up one new model. This research will borrow the name of the model of Dias-Sardinha et al., "Sustainability Performance Evaluation", to name this new method, which will be endued with different structure and emphasis from the old one. The unaltered one is the purpose: to evaluate and provide the information about sustainability performance of organizations covering environmental, social and economic aspects.

Figure 3.2 shows the reference framework of the SPE from two-dimensions: one is developing from the traditional evaluation to the strategic performance evaluation to close the SG 1, the other is transferring the evaluation from general management to environmental management to meet the requirement of "Sustainable Development" and reduce the SG 2. The intersectional where one line crosses another is the SPE with the BSC. Therefore, based on the concept of ISO 14031, with the help of BSC, a new methodology "Sustainability Performance Evaluation" (SPE) can be developed to encompass multi-aspects such as social, economic and environmental issues.

3.1.3.2 "Strategic Gap 3" of Performance Evaluation in Government

When the two-dimensional framework of SPE seemed to provide an excellent solution to the SG 1 and 2 perfectly, a new gap presents itself. This gap comes from the limitation of the theory NPM, which advocates the adoption of business

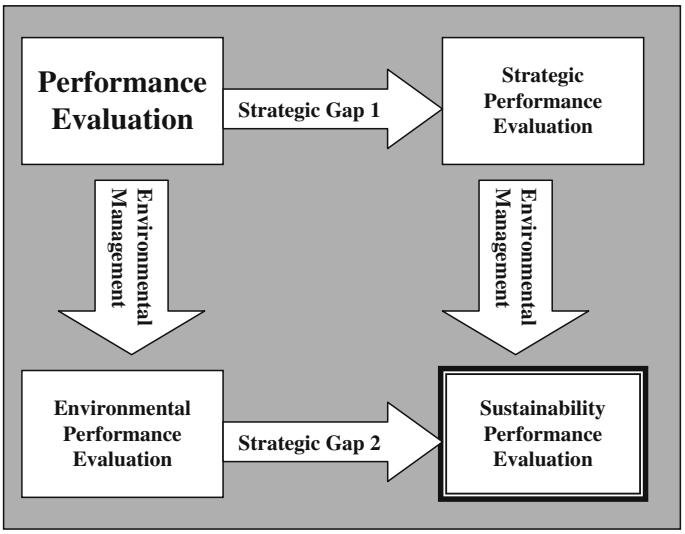

Fig. 3.2 Two-Dimensional Conceptual Framework of Sustainability Performance Evaluation

methods and values in the public administration by lessening or removing differences between the public and the private sector (Hood, 1995). As discussed in Chapter 2, the NPM suffers criticism focusing on ignoring the fact that public management differs from private management in its essential nature, stressing short-term managerial results but neglecting the achievement of public sector's mission and long-term objectives that meet the needs of the public; comparing the citizen to "customer", which garbles the political meaning of "citizen" and may result in the adverse impacts on accountability and democracy.

In historical perspective, the deviation of performance evaluation from political intention began indeed since the 1930s. By 1912 performance measurement included measuring inputs, outputs and results, focusing on both accountability and productivity improvement (Williams, 2002, 2003), while by 1930 the focus of performance measurement narrowed from government to government service and its primary purpose shifted from political accountability to management effectiveness. That is, the point had become much more management oriented: to assist the mayor, city manager, governor, or expert administrator to get good results out of limited resources (Williams, 2004). The NPM aggravated this deviation further by managerialist who advocates that better performance leads to a more favorable image of government. The overemphasis on managerial performance since the 1980s causes public service to become increasingly distant from citizens' expectations. Moreover, the evaluation approach with standard setting and targets as a methodology leads to overemphasize the formal compliance. Once the objectives were set during the planning, the implementation and compliance of the objectives became the targets of management, and improvement of operational performance became the objective of evaluation, while the accountability as a final purpose of public management was neglected. As Kravchuk and Schack (1996) point out, the

development of performance evaluation systems that are increasing reliance on formal measurement approaches may misinform as much as they inform, if users are unaware of the subtle limitations of measurement systems. Atkinson and McCrindell (1997) believe, when the performance evaluation's measures and indicators are "too operationally focused" and fail to take into account all the stakeholders (the public), the dissatisfaction with accountability will rise.

In the democracy society, the government is the servant of the people (Matravers, 1998). According to the social contract theory, there is an agreement between the government and the people, in which the people agree to give up some liberties in return for security, protection of right, and so on. In this sense, the relationship between the government and citizens is the "principal-agent relationship", in which the people grant authority or power to government and control it with the political election. In another words of business, the citizens are the owner of government in both political and economic sense, for the citizens pay the tax as investment to government; on the other hand, the government offers the public service to the citizens, who still play the role of customers; besides them, citizens as partner of government take part in policy-making and implementation. Therefore, the role of government is multifold, and just like the statement in Gettysburg Address by Abraham Lincoln in 1863, quality government should be "government of the people, by the people, for the people" (Mizaur, 1993), but not just the manager of public resource and public service.

In order to ensure the achievement of the mission and strategy in government, and satisfy the citizens, a public participatory approach should be under the consideration. According to the theory "New Public Service", the processes of collaboration and citizen participation in the strategic planning and implementation process will ensure the long-term success of public sector. Considering stakeholders' expectations can be an effective way of integrating a wider range of relevant stakeholders, who can point out the different viewpoints, into management decisions before intensive planning steps and during the strategic implementation (Kuhndt, Geibler, & Eckermann, 2002). Engaging citizens in policy-making is widely considered as core element of good governance (Vergez & Caddy, 2001). For several types of projects (particularly those that aim to affect decision-making processes at various levels), participation of institutions and people is crucial for the sustainability of the project (Segnestam, 2002). Under the background of sustainable development as a national strategy, significant progress has been made for institutionalizing participation approaches since the 1992 Earth Summit and in many developed and developing countries, such as, national councils for sustainable development, cross-sectoral councils, and independent advisory bodies (Swanson et al., 2004). The very process of public consultation in the preparation of a strategy has been also used as a learning and adaptation mechanism in India, where a number of initiatives were taken such as a review of policies in relation to *Agenda 21*, multi-stakeholder consultations, a media campaign and websites (Swanson et al., 2004).

However, challenges still remain for measuring the efficiency of citizen participatory approaches and their impact on public policy-making and administration. According to a research by OECD, no OECD member country currently conducts a systematic evaluation of their effort to enhance access to information, citizen

feedback, consultation and active participation, although all those participating in the survey expressed an interest in improving their capacity for evaluation (Vergez & Caddy, 2001). Therefore, performance measurement remains largely management-driven (Pintér, Hardi, & Bartelmus, 2005), but pays little attention to democratic perspective and substantive control. This limitation leads to inadequate performance evaluation in government, with little help in understanding what services are provided and to whom. For the sustainability-oriented management in mission-focused government, it is a real "death-wound", which may cause immeasurable risks of the governments in the future.

Strategic Gap 3 (SG 3): Current performance evaluation system focuses on the managerial accountability and performance improvement, but pays less attention to citizen satisfaction and participatory approaches.

This limitation makes the application of SPE rooted in the business sector facing more challenges, especially how to remove the SG 3 and to fit the requirement of public administration towards sustainable development. To satisfy the citizen, performance evaluation practice should be improved so that it can measure what the citizens really care about. The modernization efforts are not only focusing on service quality and performance improvement, but also considering the viewpoint of citizens' attitudes as a factor (Bouckaert & Van de Walle, 2003). So, the performance evaluation should give attention to both the administrative performance and public accountability, and improve itself from three perspectives. Firstly, citizen satisfaction will be taken into account as one complementary objective of managerial success. Secondly, the evaluation scope of new model should be extended to include the standardized participatory approach as one measure of the internal process, which can perfect the objective evaluation further. Lastly, the process of performance evaluation will be improved by citizen participatory approach. When the relation between the quality and performance of public services and citizen satisfaction in government is not so obvious, that is, top-quality public service can't ensure to lead to the citizen satisfaction and trust certainly, the full-process citizen participation in the evaluation process will be a valuable way to promote citizen perceptions and satisfaction with public service. Based on the three improvements, a citizen-oriented performance evaluation system will be gestated, in which citizens and public sectors work together to establish performance measures that are meaningful to both parties: on one side, it makes the public likely to become more sensitive to accountability issues in general; and on the other side it can support and strengthen the institutions and practices to improve public services. All of these thoughts will give new ideas to the new model of performance evaluation in government, which will be discussed in the following texts.

3.1.4 Three-Dimensional Conceptual Framework

Building on the two-dimensional conceptual framework, a new dimension is established to close the SG 3, that is, to rectify the deviation from mission of public administration. Therefore, the three-dimensional conceptual framework is built up

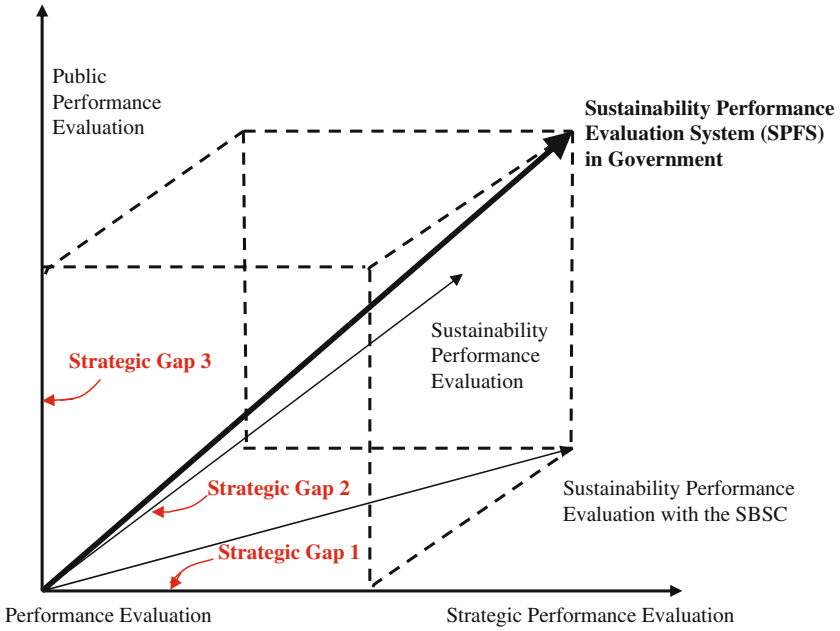

Fig. 3.3 Three-Dimensional Conceptual Framework of Sustainability Performance Evaluation

with two steps: the first one is to learn from and adopt the business methods according to the market-orientation principle of NPM, which forms the two-dimensional model SPE; the second step is to modify it to meet the requirement of public service, due to the difference between the public and private sector.

Figure 3.3 illuminates the three-dimensional conceptual framework of SPE in government. The starting point is the current performance evaluation system, which focuses on the achievement of preset objectives but pays less attention to the translation of the long-term strategy (SG 1) and overlooks the integrated objectives of sustainable development (SG 2). To remove these gaps, some suggestions profited from the business methods and tools show us the way to build up the SPE with the help of the SBSC. During the modification of SPE to the public sector, the SG 3 is supplied by emphasis of citizen satisfaction and participation. Finally, at the terminal, the three-dimensional conceptual framework of SPE in government comes out. It lays the fundamental stone of this book.

3.2 Definition of Sustainability Performance Evaluation System (SPES)

According to the above three-dimensional conceptual framework, a new system named SPE will be established for the government, which bases on the ISO 14031, and will be improved in a sustainable way with the help of the BSC. And

citizen participation as the third elements will be taken into account in this new system. It is very difficult to give a shot and clear definition of SPES. Therefore, the new system will be outlined with the information provided by the conceptual framework.

3.2.1 Working Definition of SPES

As the above mentioned, this study borrows the name of the model of Dias-Sardinha et al., "Sustainability Performance Evaluation", to call the new method, but endues it with different meaning and emphasis.

The word "Sustainability" (in German: Nachhaltigkeit) was used for the first time in 1712 by the German forester and scientist Hannss Carl von Carlowitz in his book on forest sciences[15] (Keiner, 2005). After the term "Sustainable Development" was adopted by the *Agenda 21* program of the United Nations, some people still use "Sustainability" as the umbrella term of "Sustainable Development".

According to ISO 14031, "environmental performance" is the "results of an organization's management of its environmental aspects". And as the above statement, the implication of performance will extend from three dimensions. So the "sustainability performance" will be the results and determinants of an organization's management towards sustainable development, including the participatory approach. The further explanation will be found in the following text about the evaluation scope.

Performance evaluation is a process to help decision-making regarding an organization's performance by selecting indicators, collecting and analyzing data, assessing information against performance criteria, reporting and communicating and periodically reviewing and improving this process (Coelho, 2005). SPE goes beyond the traditional performance evaluation and plays the role as a strategic control, in which it not only validates whether the results anticipated in planned actions are realized, but also controls the strategy management to ensure that the three-dimensional strategy "Sustainable Development" has been translated into actions well and truly. In this study, SPE is developed into a strategic control system in government further, which contains "what" and "how" to evaluate the sustainability performance in government. So the definition of SPES can be outlined as follows.

Sustainability Performance Evaluation System (SPES) is a strategic control system, which measures an organization's sustainability performance in government and provides information on both results and determinants of results to ensure the success of integrated strategy "Sustainable Development".

[15]The name of this book in German is "Sylvicultura Oeconomica".

3.2.2 Comparisons with Other Models

To define and understand this new concept more clearly, comparisons with some actual models, such as the M&E, Strategic Environmental Assessment and the traditional EPE will be made as follows.

3.2.2.1 Monitoring and Evaluation (M&E)

The overall objective of the sustainable development strategy process, including leadership, planning, implementation, monitoring and learning, is to improve or restructure the decision-making process so that consideration of socio-economic and environmental issues is fully integrated and a broader range of public participation assured (UN, 1992; UNDSD, 2007). As part of this cyclical process of continuous improvement towards sustainable development, M&E play a central role for quality control and provide the feedback information to improve the performance of operations and decision-making (Mohamed, 2000; UN DESA, 2002). Therefore, the final purpose of M&E is to facilitate the decision-making regarding the NSDS, while the SPES is designed as a new model of performance evaluation inside of the government, which measures and analyzes how well government and its agencies implement the sustainable development as a national strategy, in order to improve the public accountability and performance of government.

3.2.2.2 Strategic Environmental Assessment (SEA)

Strategic environmental assessment (SEA), as an extension of project environmental impact assessment (EIA),[16] has been carried out indeed since the enactment of the National Environmental Policy Act (NEPA) in USA in 1969. However, in European Union it has been increasingly important and it has been viewed as a valuable technique for achieving sustainable development. A Europe-wide Directive started operation in July 2004 (Glasson, Therivel, & Chadwick, 2005). According to the definition of Canadian Environmental Assessment Agency (CEAA) (2006), SEA is "systematic and comprehensive process of evaluating the environmental effects of a policy, plan or program and its alternatives". In other words, it is a form of EIA for policies, plans and programs (PPPs) (Glasson et al., 2005). Most practitioners view SEA as a decision-aiding rather than a decision-making process (like EIA) – a tool which aims to integrate environmental considerations into proposed laws, policies, plans and programs (Dalal-Clayton & Sadler, 1999). Thus, three differences between SEA and SPES will be displayed in Table 3.1.

[16]EIA or Environmental assessment (EA) is a process for identifying project and environment interactions, predicting environmental effects, identifying mitigation measures, evaluating significance, reporting and following-up to verify accuracy and effectiveness. It is used as a planning tool to help guide decision-making, as well as project design and implementation (CEAA, 2006). EIA was first formally established in USA in 1969 and has spread worldwide and received a significant boost in Europe with the introduction of an EC Directive on EIA in 1985 (Glasson et al., 2005).

Table 3.1 Comparison Between SPES and SEA

	SEA	SPES
Purpose	Rational decision-making, reduce environmental risk	Public accountability, improvement of performance
Scope	Predicted environmental impacts of policies, plans, and programs (PPPs)	Results and determinants of sustainability management
Time	Ex-ante	On-going

Firstly, their overall objectives are different. The purpose of SEA is to promote the integration of environment issues into decision-making, that is, it focuses on facilitating the design of environmentally sustainable policies and plans. In order to provide the information basically consisting of predictions about how the environment is expected to change if certain alternative actions are implemented, SEA must carry out prior to decision-making (Abaza, Bisset, Sadler, & United Nations Environment Programme, 2004) or in parallel with the plan-making process, which can provide environmental information at all relevant stages (Glasson et al., 2005). In this sense, this approach provides a new planning framework for Sustainable Development, and tends to focus on preventing environmental problems in the strategic planning phase. Moreover, the assessed scope of SEA focuses attention on the environmental impacts of PPPs, even though SEA has begun to include prediction and evaluation of social, economic and health impacts as well as environmental impact increasingly (Abaza et al., 2004). Whilst the SPES provides the information to improve accountability and performance, and will be on-going process including the input, process, output, outcome and even impact to get the results and determinants of sustainability management.

3.2.2.3 Environmental Performance Evaluation (EPE)

As above mentioned, SPES adopts EPE as a platform, which provides a well-structured framework with PDCA process and indicator system. As the introduced in Chapter 2, the current EPE has some limitations, such as its emphasis on the operational results and neglect of strategic control, which will be outlined during the comparison with SPES. Those limitations are just where the new model needs to improve.

To design the new model, it is important to identify several factors: the purpose of the measure, the entity whose quality is being measured, the dimension of quality being measured, the type of measure, and who will use the measure (Eddy, 1998). These factors can be formulated into five “W”, that is, why, whom, what, how and who. The definition of SPES has indicated that the SPES is a performance evaluation system used by the evaluation institutions and the public (who) to control the sustainability performance of government and its agencies (whom). So, this comparison will focus on three elements: “why the new system is necessary”, “what it

Table 3.2 Comparison Between SPES and EPE

		EPE	SPES
Objective		Rational decision-making	Public accountability, performance improvement
Scope (What)	Vertical extension	Results of environmental management	Results and determinants of sustainability management
	Horizontal extension	Environmental performance (Eco-efficiency)	Sustainability performance (social-economic-environmental)
	Deep extension	Managerial Performance	Managerial Performance and Citizen Satisfaction
Standard		Economy, efficiency and effectiveness (3 E's)	Economy, efficiency, effectiveness, environmental and equity (5 E's)
Process (how)		PDCA	PDCA with citizen participation

evaluates", and "how to measure". Table 3.2 shows the main elements of the SPES comparing with the traditional EPE.

Comparing with EPE, the outline of SPES will be drawn, including the objective, scope, standard and process, which answer the basic question of a performance evaluation system: "what" is evaluated and "how" to measure. The details will be expounded in the following paragraphs.

3.3 Objective of SPES in Government

After definition, before the construction of the system, the first element to design the new model of SPES is to determine the objective (purpose), that is, "why we need it?", which will identify the overall structure. The objective of ISO 14031 is to "facilitate the management decisions regarding an organization's environmental performance" (Dias-Sardinha & Reijnders, 2001), that is to ensure the rationality of decision-making. However, this neutral objective can't reflect the distinctions between the public and private sector, and may confuse the final goals and departure the orientation of performance evaluation, when the business EPE will be translated into the public sector. Drawing on the lessons from the NPM, government can't be managed as a company, since the public sector has multi-dimensional objectives and more social responsibility. This section will discuss the objective of the new model, which reaffirms the "public value" of administration activities in government.

3.3.1 Dual Objectives: Public Accountability and Performance Improvement

Performance evaluation has several objectives in the public administration field. Williams (2003) states it helps government to observe itself so that government could be accountable for its use of resources to meet public purposes (reporting); allocate resources for public purposes (budgeting); and get better at using resources for public purposes (productivity improvement). In practice, the Government's Evaluation Strategy in Australia had three main objectives: providing fundamental information about program performance to aid Cabinet's decision-making and prioritization, particularly in the annual budget process; encouraging program managers to use evaluation for the improvement of their programs' performance; and strengthening accountability by providing formal evidence of program managers' oversight and management of program resources (Mackay, 2004). Therefore, there are two aspects of the evaluation objective in government: one is the managerial objective, i.e., controlling the products and service quality and aiding strategic planning and decision-making by providing feedback information, in order to continuously improve the performance; the other is to promote the accountability and transparency of government administration.

The Tokyo Workshop *Evaluation Feedback for Effective Learning and Accountability* in 2000 discussed the relationship between these dual goals of evaluation feedback: learning (performance improvement) and accountability. While it was recognized that there are significant overlapped parts between them, it was also seen that they are not identical, involving different target audiences and requiring sometimes quite different approaches. Three groups of views were expressed at the workshop on how the two functions relate to each other:

(1) Some argue that accountability is still the core function of central evaluation units, and create the "incentive framework for learning". The new emphasis on learning needs to be built from this and not to be seen as being in opposition to it.
(2) Some point out that there are tensions between the two, and put learning explicitly at the top of its agenda.
(3) Others argue that learning and accountability are two sides of the same coin. It is useful to decide on a case-by-case basis whether learning or accountability is the priority in a particular evaluation (OECD, 2001).

These contrasting attitudes are partly a reflection of the differing backgrounds of agencies and the relative positioning of evaluation units within them (OECD, 2001). Moreover, it also reflects the difference between public and private values. In the business sector, when program evaluation is used only for external accountability purpose and does not help managers improve their programs, the results are often not worth the cost of the evaluation. Therefore, the major goal of private sector should be to improve program performance, although accountability will continue to

improve the program evaluation, thereby giving customers and stakeholders better value for money (Newcomer et al., 1994). When the private values were introduced into the public sector, performance improvement became the primary objective of public administration. However, the mission of government is to meet the needs of the public, so that government must be responsive to the needs of citizens firstly. According to Moore (1995), the aim of managerial work in the private sector is to make money for the shareholders, while the aim of managerial work in the public sector is to create "public value". The ultimate end of performance evaluation should be to promote the accountability, while the managerial success plays the role as a means to improve the accountability of public service. By contrast, public accountability is a major determinant of public service performance, and using the feedback mechanisms (from the public) in conjunction with the hierarchical control mechanisms can augment the impact of public accountability on performance (Paul, 1991). So, both public accountability and performance improvement are believed to be the important objectives for performance evaluation, just like the opinion of Halachmi (2002, 2004), that the evaluation of public administration should focus on two important values at the same time: the need to assure accountability and the need to improve performance. This study tries to pay same attention to both values as the objectives of SPES, but the "public accountability" will be accentuated in the following text to rectify the overemphasis of "managerialism" advocated by the NPM in the past two decades.

3.3.2 Public Accountability, Sustainability and Citizen Satisfaction

Accountability, as an important value of governance, is the main reason for the introduction of performance measurement. However, "accountability" in the human services has involved many issues such as the organizational management, financial responsibility, legal framework and political concerns, while the public accountability became also a very elusive and broad concept during its increasing application in political discourse and policy documents. Because a full discussion of public accountability is beyond the scope of this paper, a brief review focusing on the development of public accountability will be made firstly to discover the ultimate objective of performance evaluation at present.

3.3.2.1 Short Review of Public Accountability

The idea of public accountability is perhaps as old as organized government. It can be tracked back classical Athens and advanced in all ages according to the nature of the state itself (Normanton, 1966; Pashang, 2003). In keeping with the definition of Aristotle, public accountability is exercised in term of political responsibility (Pashang, 2003). But accountability is not the same thing in all ages. The "separation of powers" of the law-making function from an executive or state-management function in twentieth century made the accountability to new meaning, that is, the managing power must be accountable to the power that made the law in

financial matters (Normanton, 1966). In the late twentieth century, a transformation of financial accounting into a broader form of public accountability ran parallel to the introduction of NPM in the UK. In the NPM ideology, starting as an instrument to enhance the effectiveness and efficiency of public governance, public accountability has gradually become a goal for "good governance" in the public sector (Bovens, 2006). But in this period, "accountability for performance" as one component of NPM stresses on rational public management and financial and managerial performance evaluation (Gruening, 2001), thus performance efficiency became the main goal of public organizations.

The animadversion on the NPM appeared after 1990s for the overemphasis of the financial efficiency made the government lose the trust of citizen. Whatever the movement improved the efficiency or not, it made the mistake after all: it forgot the duty of public sector, which should offer the citizen more and better public goods and service to remedy "Market failure", that is the reason the public sector exists. Drawing on the lessons from the NPM, some propositions call for the redefinition of public accountability. In 1995, the British government published *The Strategic Management of Agencies – Models for Management* to emphasize the concept of government stakeholder for the strategic planning and target setting. In the United States, the GPRA in 1993 provided a new focus on result, service quality and customer satisfaction (Atkinson & McCrindell, 1997), in order to "improve the confidence of the American people in the capability of the Federal Government, by systematically holding Federal agencies accountable for achieving program results" (US OBM, 1993). In light of these developments, the scope and meaning of accountability has been beyond its core sense of being called to account for one's actions and extended in a number of directions: from external scrutiny to internal management, from financial control to behavior control, and then public accountability developed further into a means of making officials responsive to public wishes and democratic dialogue with the citizens (Mulgan, 2000).

3.3.2.2 Public Accountability and Citizen Satisfaction

The study of literature shows that the concept of accountability in the public sector means different things under different cultures and at different time (Pashang, 2003). In contemporary political and scholarly discourse "accountability" often serves as a conceptual umbrella that covers various other distinct concepts, and as a synonym for many loosely defined political desiderata, such as, transparency, democracy, responsiveness and responsibility (Bovens, 2006). Pashang (2003) argues, accountability as a fundamental political concept focuses on two dimensions: outward and upward. The "outward" dimension emphasizes on qualification such as face-to-face communication and direct political accountability to community, whereas the "upward" dimension refers to a straight-line relationship in that public servants are considered to be accountable to ministers, cabinet or parliament. The upward accountability should stress the managerial efficiency and performance improvement to meet the requirement of the superiors, while the outward accountability relating to political responsibility will pay attention to the relationship between

government and citizen, such as the satisfaction of the citizens (as customers and stockholders). Influenced by the NPM movement, the upward managerial accountability is overemphasized by assessing the performance (efficiency and effectiveness) of the public sector, due to the political and technical difficulties. When the governments begin to emphasize more on "governance" than "government," this research pays more attention to the outward accountability or political accountability to rectify the weakening the importance of external scrutiny and overemphasis on managerial accountability. That is, public accountability reclaims the meaning of political responsiveness and transparency, and "citizen satisfaction" will be taken into account during the strategic planning and performance evaluation.

Because the performance measurement in government is related to accountability, it is important to provide a democratic means to monitor and control government conduct, for preventing the development of concentrations of power, and to enhance the learning capacity and effectiveness of public administration (Aucoin & Heintzman, 2000). Bovens (2006) divided the accountability assessments into two groups: the internal or procedure assessment affording a framework for a normative analysis of accountability procedures; the external assessment from democratic perspective (meeting the needs of relevant stakeholders), constitutional perspective (prevention of corruption and abuse of power) and cybernetic perspective (enhancing the learning capacity). The existing performance evaluation involves only the internal assessment stressing on regularity compliance and managerial performance, but pays little attention to democratic perspective and citizen satisfaction. That is just the so-called SG 3, which leads to inadequate performance measurement systems and misunderstanding what services are provided and to whom. In order to remove this gap, the SPES should contain the democratic perspective of public accountability into the objectives and develop a new model to measure the citizen satisfaction.

3.3.2.3 Sustainability and Citizen Satisfaction

According to Dias-Sardinha and Reijnders (2001), the performance evaluation is linked to the strategic objectives of organizations strongly, because the strategic objective determines the performance goals and criteria. When the concept sustainable development was accepted as the national development strategy, the mission of government is formulated into three objectives: social equity, economic growth, and environmental protection. Once when the sustainable development as national strategy is enacted by the legislature, government takes the (managerial and political) accountability of its economic, social and environmental performance regarding the sustainability management. Performance evaluation, which should check how the organization stands with the respect to the strategic objectives, includes not only the economic but also social and environmental performance in a balanced manner. Any emphasis on one aspect or neglect the others will make the accountability lose the balance. At the same time, the major idea of sustainable development is to achieve the welfare between generations, i.e., within the context of sustainable development the needs of citizens are reified to the three-dimensional sustainability objectives. When measuring how well government and its departments reach the national

strategy sustainable development, the citizen satisfaction of public service still is a very important criterion, and it even can be considered as the primary objective above the three-dimensional sustainable objectives. If the policy or public administration towards sustainable development meets the preset goals and objectives but fails to satisfy the citizens, this public service can't be considered efficient and effective.

In order to ensure that performance results are consistent with the mission and strategies of sustainable development and citizens are satisfied with the public service quality, current performance evaluation practice must be improved to measure what the citizens really care about (Yang & Holzer, 2006). Chakravarthy (1986) proposes two measures to evaluate the strategic performance: one is to assess the quality of transformations (and not merely its outcomes); the other attempts to measure the satisfaction of all of the stakeholders (and not merely its stockholders). However, there are still some technical problems to use the subjective data like citizen satisfaction to measure service performance. Sample survey of citizens provides government a potentially important method to collecting data on citizen satisfaction with public service, but the expressed satisfaction may not reflect service performance, and different statistical and conceptual problems complicate the use of subjective data to measure service performance (Stipak, 1979). To meet the challenge of sustainable development successfully, a participatory approach is essential. Decisions need to be supported by broad-based consultative and awareness – raising activities, by openness in decision making and by high quality assessment processes. In this context it is essential that all players have access to appropriate information and that meaningful indicators are made available (OECD, 2000). Therefore, citizen participation and communication should be brought into the evaluation scope to ensure the "citizen satisfaction" as the primary objective, which will be discussed in the next section.

3.4 Three-Dimensional Extensions of Evaluation Scope

Evaluation scope refers to what should be evaluated. Just as its name implies, sustainability performance is the main object of SPES. There is no accepted definition of performance and performance measurement in academic filed, while the connotation of performance is advancing with the management innovation. To meet the requirement of sustainability management in government, SPES is designed to update the traditional performance evaluation by closing its three SGs, indicating that the evaluation scopes should be extended from three dimensions: to close the first SGs, the evaluation scope of the new system should extend from vertical dimension to take the determinants under the control; to bridge the SG 2, a horizontal extension of the primary objectives (results) should reach the three-dimensional and integrated "Sustainability Objectives" (see Chapter 4); to remove the last gap, the third extension deepens the meaning of performance evaluation by including citizen participation into the SPES to meet the mission of public sector. Finally, an input-

output-outcome-impact model will be developed for SPES, which contains all of the three-dimensional extensions and describes the evaluation scope of SPES in a compact way.

3.4.1 Vertical Extension: From Results to Determinants

As mentioned in Chapter 2, some writers like Fitzgerald, Johnston, Brignall, Silvestro, and Voss (1991), Atkinson and McCrindell (1997), Kaplan and Norton (1992, 1996, 2001) have advanced a strategic control tool "Strategic Performance Evaluation" to extend the measures from results (primary objectives) to determinants (secondary objectives). For example, the BSC of Kaplan and Norton divides the measures into two groups as results (financial, customer) and determinants (internal business processes, growth and learning) and connects them with a cause-and-effect relationship. The concept of causality indicates that the expected results are a function of determinants, such as, the internal business process and capacity building, which reflect the organization's strategic choices about how it chooses to pursue its expected results. Thus, a focus on the determinants elements can enable the rationality of strategic planning and formulation. In short, the extension of evaluation scope to the determinants of results can provide a more logical and comprehensive framework to control the strategy planning and implementation simultaneously and ensure the efficient translation of mission and strategy into actions.

3.4.2 Horizontal Extension: From Eco-Efficiency to Integrated Sustainability

Since 1992, the understanding of sustainable development has moved from an environmental strategy to a strategy that integrates economic, environmental and social objectives in a balanced manner, while most national initiatives are still driven by environmental actors. At the same time, environmental and economic indicators still form a major part of sustainable development indicators. To remove this limitation, the performance evaluation should bring the three dimensions principles of sustainable development into the primary objectives of SPES in government. This horizontal extension from eco-efficiency to three-dimensional sustainability can facilitate to improve the social welfare and enhance the consciousness of balance among nature and human beings. Moreover, at the heart of operationalizing sustainable development is the challenge of evaluating and managing the complex interrelationships between economic, social and environmental objectives (UN DESA, 2002). Therefore, it is necessary to develop an integrated set of indicators to allow analysis of the inherent trade-offs and inter-linkages between the economic, social and environmental dimensions of sustainable development, which can provide comprehensive information about the positive and negative impacts of economic, social and environmental policy changes.

3.4.3 Deep Extension: From Managerial Performance to Citizen Participation

The introduction of business value and methods to public management led to the overemphasis on the improvement of managerial performance and neglect of the ultimate mission of government to meet the needs of public. In order to close the SG 3, performance evaluation practice should be improved to measure if the citizens are satisfied with the public service to balance the overemphasis on managerial performance. Due to the limitation of social survey on citizen satisfaction with public service, the subjective data of citizen satisfaction can just play a role as complement of the objective evaluation system, and performance evaluation practice should be improved to a participatory process.

"Think strategically, act democratically." (Denhardt & Denhardt, 2002) On the way towards sustainable development, the public participatory approach should be adopted into the performance evaluation system in government to balance the overemphasis on managerial performance. Since the concept of sustainable development was firstly mainstreamed in the late 1980s and early 1990s, the advancements in participatory governance have been quite significant (Swanson et al., 2004), which help national strategies obtain the collective feedback of all stakeholders in the country. If you can't measure it, you can't manage it. The approach of citizen participation, a means to reveal their collective preference to ensure that citizens' needs are appropriately matched by governmental services and that the service quality is satisfactory (Chen, Huang, & Hsiao, 2004), should be under the control as an institutionalized approach of internal management process. The extension of evaluation scope to the process and resource allocation of citizen participation will be valuable to promote the institutionalization of citizen participation objectively, which will satisfy the citizens besides administrative and sustainability performance improvement. In short, the citizen participation in performance evaluation may help public managers focus on what really reflect the needs and concerns of citizens, and increase the impact of performance evaluation by encouraging manager to look beyond traditional output measures and focus on quality of life issues and community goals instead (Callahan, 2004).

3.4.4 Input-Output-Outcome-Impact Model of SPES

The extension of evaluation scope enriches the meaning of performance from three dimensions, which removes the gap of focusing on outputs/results in quantitative terms and neglecting inputs and procedures controls, bridges the SG 2 by widening the objectives from eco-efficiency to integrated sustainability, and adds citizen participation as a new measure to ensure the social impact about what the organization is achieving in satisfying the needs and the expectation of local, national and international community at large (Oechsler, 2002). In order to describe the evaluation scope of SPES in a compact way, an input-output-outcome-impact model will be

adapted as the objective measures of sustainability performance, whereas the subjective public-opinion poll will be accepted as the complement to balance the limitation of objective evaluation. Since the sustainability performance has extended from vertical, horizontal and deep dimensions, the implication of input, output, outcome and impact should be redefined:

Inputs: resources dedicated to or consumed by a program, including financial, human, information and organizational capital and so on.
Processes: how effectively the inputs are used to fulfill the mission through the program. For SPES, processes are the element that ensures the planning and implementation of the sustainable development strategy. Such as, the citizen participation is necessary process for the public administration and decision-making.
Outputs: direct products of the administrative activities focusing internally on the program or service itself, measured as the work accomplished. Usually outputs may be the numbers of participants served, materials developed, or supplies consumed.
Outcomes: progresses or benefits made by the public administration, mainly the more immediate, tangible or observable changes.
Impact: the long term and widespread consequences of the administrative intervention, including social, economic and environmental conditions, especially the citizen satisfaction of public service.

Among the above five elements, there is a balanced relationship, in which overemphasis or neglect of any elements won't lead to the comprehensive and objective judgment. Moreover, Fig. 3.4 indicates the causality among the five elements: from input to output, it concerns of the internal process, so the causality is obvious; but from output to outcome and to impact, some external factors of environment will perform a function, so the causalities between output and outcome, outcome and impact are uncertain. These uncertainties make more difficult to measure the

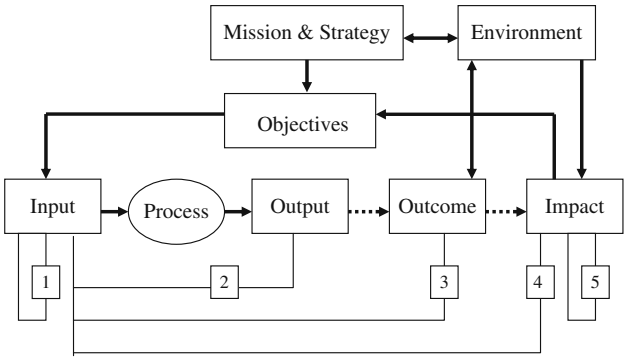

Fig. 3.4 Key Elements and Their Relationship of Sustainability Performance. Adapted from Bouckaert (2006)

sustainability performance, so the subjective methods, such as, citizen participation, are necessary to fulfill this gap. As shown in Fig. 3.4, there are also some relations between two elements expressed as the quotient of one divided by the other, such as input/output, input/outcome, input/impact and so on, which will be introduced as evaluation standard in the next section.

3.5 Evaluation Standard: From 3 E's to 5 E's

Whenever a comparison is made, or whenever an opinion is stated, or whenever a judgment is made, there must be a standard of evaluation, the criteria by which something is being measured. In many countries performance evaluation is under an obligation to meet the requirement of the current regulations, formal regularity compliance thus is the primary standard of the traditional performance evaluation. Furthermore, performance evaluation has strong linkage with the philosophy, ethics, strategy and evaluation objective, which determines the performance goals and evaluation criteria. When the evaluation scope extends from three dimensions, evaluation standards face challenges. To determine the new evaluation standards for the SPES, a review should be helpful to understand the context in the history.

3.5.1 Max Weber's Formal Rationality and Efficiency

Max Weber (1978) proposed an interpretation of economic action that distinguished between two different types of rationality: formal rationality[17] and substantive rationality.[18] While the formal rationality is based on "goal-oriented" rational calculation with the most technically available methods but eliminates an orientation to values, sustainable rationality applies certain criteria of ultimate ends (values), but does not take the nature of outcomes into account. Based on this distinction, Max Weber developed the most general element of his theory "Rationalization", that is, formal rationality replaced substantive rationality (the satisfaction of political) in order to establish "Bureaucracy" system, which stresses a technical orientation to means and ends. As a particular case of rationalization, or rationalization applied to human organization, bureaucracies are goal-oriented organizations designed according to (formally) rational principles in order to efficiently attain their goals (Elwell, 1996). Weber (1978) agues, a bureaucracy is "from a purely technical point of view, capable of attaining the highest degree of efficiency and is in this sense formally the most rational known means of exercising authority over human beings". Since

[17]Formal rationality is to "designate the extent of quantitative calculation or accounting which is technically possible and which is actually applied" (Weber, 1978).

[18]Substantive rationality is "the degree to which the provisioning of given groups of persons (no matter how delimited) with goods is shaped by economically oriented social action under some criterion (past, present, or potential) of ultimate value (Wertende Postulate), regardless of the nature of these ends" (Weber, 1978).

the late of nineteenth century and early of twentieth century, bureaucracy and rationalization were rapidly replacing all other forms of organization and thought, and formed a stranglehold on all sectors of Western society (Elwell, 1996), which deeply influenced the modern administration theory and practice until today.

Under Weber's formal rationality and the famous Wilson's politics-administration Dichotomy, public administration began to seek for "Efficiency" as the primary objective by the application of technical criteria which made possible a particularly high degree of calculability of results. In USA, influenced by Frederick Taylor's scientific management, efficiency was believed the best solution to the problem of corruption and incompetence. In the Progressive movement, the New York Bureau for Municipal Research was the first to use performance indicators to benchmark the efficiency of public organizations, one purpose of which was to identify corruption (Gruening, 2001). In this period, "discipline inexorably takes over ever larger areas as the satisfaction of political and economic needs is increasingly rationalized." (Weber, 1978) The substantive rationality that reflects the public values was neglected, while the goals and instruments were overemphasized blindly. And too much emphasis on seeking efficiency created a dichotomy that resulted in the neglect of original objectives in public administration.

3.5.2 Reversion of Substantive Rationality: Balance of Efficiency and Effectiveness

After World War II, the reassessment of the principles of "Bureaucracy" and reclaiming the substantive rationality of public service raised. One of the most rigorous critics was Herbert Simon, whose work set the tone and direction for neoclassic public administration. In his most famous work "Administrative Behavior", Simon (1976) expatiates on the concept "bounded rationality", which directly hits the nail on the head of bureaucracy. He believes, when facing the uncertainty about the future and costs in acquiring information in the present, the limitation of both knowledge and cognitive capacity makes the agents impossible to make a fully rational decision, thus they must make a decision by "satisficing", which explains the tendency to select the first option that meets a given need or select the option that seems to address the most need rather than the "optimal" solution. Moreover, public-choice theory challenged the depersonalization of bureaucracy with the revival of individual freedom, based on the assumption that individuals pursue their own aims and act according to their preferences (Gruening, 2001). All of the thoughts inspired the movement of NPM since the 1980. Corporation with business concept "customer", "customer satisfaction" became one of primary objectives of public administration and the classic substantive rationality transferred into the customer-oriented substantive rationality with a totally new "Public" meaning.

In fact, the market-oriented NPM never gives up seeking for "efficiency", while the reversion of substantive rationality calls for the "effectiveness" of public administration. In this period, formal and substantive rationality are integrated together

further closely, and a balance is brought into being between efficiency and public values. For instance, the UK government applied "performance", consisting of Economy, Efficiency and Effectiveness (3 E's) (Xu, 2005), which became the kernel of NPM and widely diffused through the technique of audit and by financial institutions, such as the World Bank and the International Monetary Fund. Nevertheless, the governmental reform on result-based management continued to follow the goal-oriented bureaucracy's ideals and emphasize particularly on technical criteria in practice. That is, formal rationality still has a leading position, and the real balance between formal and substantive rationality hasn't come into being. From the perspective of performance evaluation, the unbalance relationship between the formal and substantive rationality is one reason of the above-mentioned SGs. To close the gaps, we should not only extend the evaluation scope from the results to the determinants, but also stress the "effectiveness" of substantive rationality as the evaluation standard and try to take the subjective judgment of citizen satisfaction into consideration of the evaluation standards.

3.5.3 Standard of Sustainability Performance Evaluation: 5 E's

Influenced by the NPM movement, the evaluation standard developed from efficiency to integration of efficiency and effectiveness, i.e., from "do things right" to "do right things". Facing on the challenge of sustainable development, environmental objective should be paid more attention as one dimension of the integrated sustainability performance. And when the public administration began to focus on more democratic structures within and without public organizations (participation was the buzzword of the movement), performance evaluation should try to support social equality (Gruening, 2001). In order to deliver real improvements in public services to local people, five main dimensions were addressed with National and Local Performance Indicators in the UK. That is, besides of the three E's (Economy, Efficiency and Effectiveness), Environmental (sustainability) and social Equity as standards are accepted (Planning Officers Society, 2002). Therefore, five main dimensions (5 E's) became the range of criteria, which including economic efficiency, environmental effectiveness, equity, administrative efficiency, political effectiveness and so on. All five standards should be considered in developing a balanced framework to answer for the managerial and political accountability at the same time. This integrated and balanced idea of 5 E's should put into effect in Chapter 5. Figure 3.4 shows five relationships between those five performance elements, which indicate the 5 E's with relations among them.

Economy (input): The input, such as money, materials, labor or resource, is minimum, at least, keeps the appropriate level of resources allocation or within budget constraint.

Efficiency (output/input): This is about how well inputs are used to achieve outputs, i.e., the ratio of the effective or useful outputs to the total inputs

in any system. In some cases, the definition of efficiency extends to outcomes/inputs or impacts/inputs.

Effectiveness (outcome or impact): About how and whether the service achieves the pre-set objectives, i.e., outcome or impact.

Environment/Sustainability (impact): About how the service contributes to integrated objectives of sustainable development, especially to the environmental condition.

Equity (impact): About how effective the service is at achieving social equality objectives, including fair access to services, equal treatment for equal needs, targeted services for particular needs, and even the citizen satisfaction to the social condition (Planning Officers Society, 2002).

3.6 Process of SPES

As one important part of SPES, process describes "how to" carry out the sustainability performance evaluation. A case study by Kennerley and Neely (2002) shows the importance of companies having a systematic process in place to manage the continual improvement of their performance measurement system, which includes measures to ensure that the systems continue to reflect the issues of importance to the business (Coelho, 2005). And in the public sector, the performance evaluation in government emphasizes the importance of process standardization too, influenced by the rationalization and bureaucracy. For example, GPRA (1993) in USA described a brief three-step process of strategic management: multi-year strategic plan, annual performance plans, and annual performance reports, which became just the three key elements in GPRA's performance evaluation process (Streeter, 1998). Obviously, this process is integrated closely into the strategic management system, but still hasn't a complete form in general. So, it is necessary to give more attention to the design of SPES evaluation processes and the continual improvement of evaluation capacity within a democratic structure.

To develop the process of SPES, we should learn from the existing evaluation process models in government and in the for-profit sector. As the introduction in Chapter 2, ISO 14031 will be adopted as the basis of SPES, partly because of the continuous improvement process, so it will be accepted as the starting point in this section, and some other models should be introduced, analyzed and used for reference to outline the process of SPES.

3.6.1 An Overview of Evaluation Process

ISO 14031 embraces an improvement process model based on the Plan-Do-Check-Act (PDCA) Cycle (see Chapter 2), which was initiated by Walter Shewhart during the 1930s, and carried forward by W. Edwards Deming since the 1950s. This cyclical four-stage process promotes continuous improvement, and can be used by a

wide range of organizations, from manufacturing facilities to service industries and government agencies.

Neely et al. (2000) reviewed the available literature and concluded that little attention had been devoted to a process-based approach to performance measurement and evaluation. And then they designed a Performance Evaluation system based in 12 phases (Coelho, 2005), which follows the PDCA framework, but takes the financial efficiency, personal training and institutional support into account. In addition, this approach takes half of 12 phases to plan this evaluation process. Andersen and Fagerhaug (2002) address a performance evaluation process of eight steps, which is similar to the ISO management systems approach, principally ISO 14031 that uses the framework of PDCA Cycle. Steps from 1 to 4 make the plan for the performance evaluation, and select the key performance indicators (KPIs); step 5 and 6 belong to the "do"; step 7 checks the performance evaluation system and then the final step is about the "act" of performance evaluation systems. In his PhD research, Coelho (2005) reviews the present models and designs a "Sustainability Performance Evaluation Management System" based in 15 steps. This model succeeds to the attribute of the foregoing models such as, integration with the management system, and follows the framework of PDCA cycle. Moreover, it develops a new concept "Network of Interested Partners" (NIP), which underpins the achievement of sustainability for individual for-profit organizations. The stakeholders are considered as interested partners, and "consultation and assessment of the needs and requirements of the interested parties" is put in the early stage of the process to set performance targets. At the same time, it includes the issues linked to sustainability i.e. social, economic and environmental issues.

In conclusion, the above models share some common attributes. First of all, they use the PDCA as the basic framework, even though the steps and emphasis are different, which makes these models improving continuously. Secondly, these models integrate the general management systems, making them more useful and usable. Furthermore, a large proportion of procedures are included for strategic planning to develop and select indicators, because this phase is the most important for the performance evaluation. For example, in Coehol's 15-step process, there are 8 steps for the planning phase. Finally, the partnership and communication with stakeholders are given attention, and their importance begins to be considered for the improvement of the organization's performance. All of them are significant for the design of a new model.

3.6.2 Five Principles of the New Process

In order to assist government to achieve progress towards NSDS and organizational sustainability, it is essential to develop a new model of SPES process. This task is made more complicated when consideration is given to the citizen satisfaction and participation. The development of the new performance evaluation process for

government requires the application of ISO 14031 as a platform, which will be improved further according to the objectives and scopes of SPES in government, and by learning from the present models introduced in the previous section. Besides the four common attributes of the present models, the sustainability objective should be stressed in the SPES. Therefore, five principles will be adopted to facilitate the design of new process in SPES.

Based on the continual improvement process model PCDA: The process of SPES will adopt the PDCA model of ISO 14031 as the basic framework, which provides a continuous improvement mechanism for SPES.

Integrating with the general management system: A well-functioning evaluation system must be integrated into the policy/program cycle (Tavistock Institute et al., 2003), because it is helpful to avoid the overlapping or absence of the authorities, and to provide timely and exact information to systems analysis efficiently. So, the SPES as an integral part of strategic management and democratic accountability should be integrated with the general management system of organizations. It will make the SPES more useful and usable, and avoid some risk of performance evaluation.

Emphasizing the need of strategic planning: Some procedures for strategic planning must be included during the early stages in the SPES. And as consequence of the plan phase, the performance objectives, KPIs and criteria related to sustainable principles and citizen participation should be developed, which is an absolutely necessary precondition for the SPES.

Citizen participation in the evaluation process: As the above statement, the citizen participation is one essential complement of managerial approaches to improve the administrative performance and public accountability. The process of SPES includes consultation with the citizens during the strategic planning and setting performance targets, communication during the implementation of SPES, reporting the results, and feedback after the implementation and reporting. This approach of citizen participation in the full evaluation process will promote citizen perceptions and satisfaction with public service.

Pursuing the sustainability: The SPES is designed to evaluate the progress towards sustainable development on a national level. The concept of sustainability hence should be contained as the primary objective of the SPES, as well as in the strategic planning process. At the same time, government as an individual organization which activities can influence the sustainable development strongly should improve its sustainability performance too. So, sustainability KPIs should be grouped into two categories: the macro objective of sustainable development as the national strategy and the micro objective of organizational sustainability in government.

3.6.3 PDCA Cycle of SPES Process

Following the five principles, a standardized process of SPES should include the citizen participation and strategic planning in line with sustainable principles, and integrate with the general management system. However, the PDCA cycle provides the basic framework, which meets the essential requirements for a well-structured process. Based on the process of ISO 14031, the PDCA process can be improved depending on the needs of the organizations into the following four-stage process:

Stage 1: Planning and Preparation
The purpose of the planning stage is to identify the evaluation scope and prepare the KPIs for evaluation. This stage consists of three components:

- Identification of evaluation objectives: the evaluation objectives should be identified at the early stage, which are determined by the mission, goals and strategy of organizations and external environment.
- Selection of KPIs and Performance Criteria: the indicators contain not only the quantity metric, but also quality measures. The selected benchmarks must be interpreted as a measurable rated value, or divided into ranges corresponding to the different degrees of satisfaction of the requirements.
- Citizen Participation: the consultation during the planning phase will facilitate good communicate with the public and final citizen satisfaction.

Besides, the preparations of budget, system and team are still very important for the SPES, such as the team training. The tasks assigned to teams must also be in line with the competences and capabilities required, so training including the KPIs and some special skills becomes necessary. However, in order to simplify the process, these preparations will be neglected.

Stage 2: Doing and Assessing
The implementation of evaluation is the core process, which is refined into three basic steps:

- Collecting Data: according to the KPIs, the relevant and available information will be gathered. Decisions about what type of data collection methods fit your program evaluation are very important to be determined at the beginning, and should be formatively assessed as the program develops.
- Analyzing and Assessing Data: the collected data will be processed, summarized, analyzed and compared with evaluation standards/criteria. And then the results will show whether and how well the objectives are achieved, which will provide the information to make managerial decision and improve the performance.
- Reporting and Communicating Results: the regularization of reporting to the public will identify who, how, to whom and when the assessed results will be communicated.

Stage 3: Checking and Testing
After assessing and reporting, the evaluation should be checked to determine the success or failure of the evaluation process from the following perspectives:

- Reliability and Rationality of an Evaluation System: the checking will focus on some questions, such as, is it reliable or stable under repetition and under irrelevant changes of the context of the measurement like the person who applies it? Is the design of evaluation indicators measurable and rational?
- Effectiveness of Evaluation Process: to measure if the evaluation is proceeding according to the plan, and if the performance and productivity is improved.
- Efficiency of Evaluation Management: Assessing cost-benefit/effectiveness, and the efficiency of identifying and allocating tasks, resources and personals.

Moreover, the citizen feedback should be given attention, while the evaluation is testing from the above perspectives. The suggestions of citizen should play the role as the determinant measures to assess the evaluation system.

Stage 4: Acting and Improving
After determining the weakness or fault of the evaluation process, some measures should be modified to improve the evaluation system, and this process will be implemented continually.

3.6.4 Eight-Step Process of SPES

From the foregoing discussion, there are a number of enhancements and changes that are recognized so as to contribute to an improved SPES. Figure 3.5 adopts all the ideas and shows the 8 steps of SPES process in government.

In this figure, four stages of PDCA outline the framework of SPES process. This evaluation approach of SPES starts with indicators selecting, and then contains collecting, analyzing and assessing information against performance criteria, finally reporting and periodically reviewing to improve this process. At the stage of plan, do and check, citizen participation will be seen at step 2, 5 and 7, which includes consultation with the citizens during the strategic planning and performance targets setting, communication during the implementation of SPES, reporting the results, and feedback after the implementation and reporting. This full-process citizen participation indicates that SPES tries to develop from a process of managerial performance evaluation with objective instruments to an approach, which pays more attention to the democratic measurements to remove the gaps of objective evaluation. Yang and Holzer (2006) argue that performance measurement has potentials to improve citizen trust in government directly through citizen participation in the evaluation process, or indirectly by improving citizens' perceptions of government performance.

In addition, this process compresses the strategic planning (identifying the evaluation objectives and selecting indicators) into one step, because its importance and

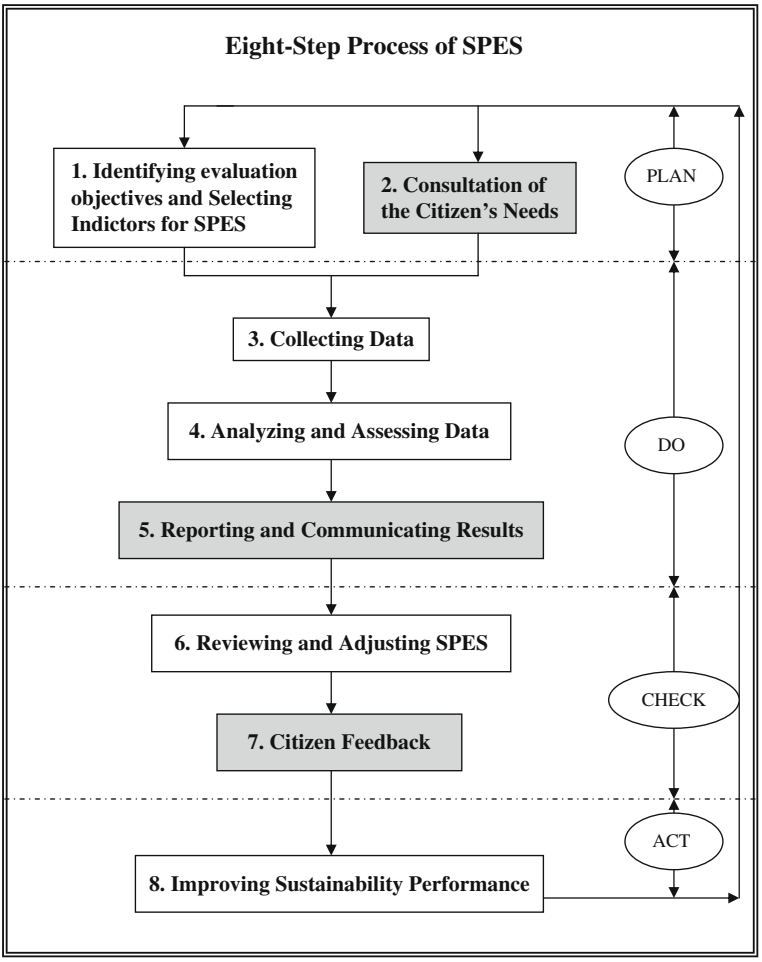

Fig. 3.5 Eight-Step Process of SPES. Adapted from Coelho (2005)

complicacy can't be interpreted clearly in this section. When the evaluation scope extends into the sustainability performance including the determinants of results and citizen participatory approach, the identification of those key factors at the strategic planning stage of SPES becomes more complicated and significant. As mentioned above, the BSC, one popular instrument of strategic performance evaluation, will be adopted as a basic method to formulate the mission and strategy into objectives and measures in a balanced way to control the governmental activity towards sustainable development. Therefore, in the following chapters, a new architecture of balanced scorecard for SPES will be advanced to refine the planning process of SPES further, which provides a framework for developing indicator system of SPES too.

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Chapter 4
Sustainability Balanced Scorecard of SPES

Abstract In this chapter, the "Sustainability Balanced Scorecard (SBSC)" rooted in the business sector is adopted and modified to refine the SPES further. Step by step, the mission and strategy towards sustainable development are formulated into tangible objectives and measures, including the results, determinants of results and citizen participation. Furthermore, a strategy map for the SBSC is developed to represent the cause-and-effect relationships among the identified key measures, which will not only offer a checklist to detect the missing elements, but also provide a causal framework to design and select indicators or indicator system for the next chapter.

Keywords Sustainability performance evaluation system (SPES) · Sustainability balanced scorecard (SBSC) · Sustainability objectives · Perspectives of SBSC · Cause-and-effect relationship · Strategy map

In the previous chapter, a new model named "Sustainability Performance Evaluation System" (SPES) is outlined, aiming at the three "Strategic Gaps" (SGs) of the current performance evaluation system in government, in which some components of SPES, such as objective, scope, standard and process, are designed based on the gap analysis. However, an organic system to integrate all incompact components closely is still not yet settled. In order to refine this new system, the Balanced Scorecard (BSC) and its new model "Sustainability Balanced Scorecard" are adopted to formulate the mission and strategy towards sustainable development into tangible objectives and measures in a balanced way. Furthermore, the identified key factors and measures will be used as benchmark to control the sustainability performance, including the results, determinants of results and citizen participation. This chapter will analyze how the concept of "Sustainability Balanced Scorecard" rooted in the business sector is improved to better adapt to the SPES in government, which will confirm the SPES further and provide a framework to select indicators or indicator system as discussed in the next chapter. Therefore, this chapter just likes the waist of this book, which connects the fundamental chapter (Chapter 3) and applied chapter (Chapter 5) to build up an organic and practical system for sustainability performance evaluation.

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4.1 Sustainability Balanced Scorecard (SBSC)

As the wide-accepted model of strategic performance evaluation, the BSC of Kaplan and Norton provides a balanced combination of financial and non-financial measurements and establishes a causal relationship between the results and performance drivers. The researches on "Sustainability Balanced Scorecard" (SBSC) originated in Germany, as mentioned in Chapter 2, have drawn unanimous conclusion that the BSC has high potential to integrate the environmental and social aspects into the general management system, which provides a meaningful instrument to the sustainability management. Even though until today there is no accepted definition of SBSC, the models of SBSC share a common character: integrating all three pillars of sustainable development, economic, social and environmental dimensions, into the business strategy to promote the corporate sustainability (Hahn & Wagner, 2001). Hahn and Wagner (2001) argue that the BSC is suitable for the integrated sustainability management because of two reasons: it is "balanced" and integrates non-financial and long-term success factors (social and environmental aspects) into the management system; and the BSC provides a causality relationship of the environmental and social aspects with long-term success of organizations and integrates them into the general management. Figge, Hahn, Schaltegger, and Wagner (2002a) also believe that BSC can help to take all aspects relevant for achieving sustainability into account simultaneously and in a balanced manner. Their arguments reaffirm the three attributes (openness, causality and balance) of the BSC discussed in Chapter 2, which indicate the potential of BSC to develop itself further. When this instrument is introduced to the SPES in government, it still faces many challenges. First of all, the role of SBSC will be redefined to meet the requirement of SPES.

4.1.1 Role of SBSC in SPES

The BSC develops continuously and changes its role according to the requirement of different organizations, so the first step to design the SBSC is to determine its role. It is well known that the BSC was designed as a business performance measurement system, and then evolved to a strategic management system. However, it dose not mean that the BSC has abandoned the function as the performance evaluation tool. According to Niven (2002, 2003), the BSC can be used as a measurement system, strategic management system and communication tool in different environments.

- **Measurement System**: the BSC describes the key elements and indicators by combining the traditional financial measures with non-financial measures at first, and then comparing them with the actual results to determine the achievement of strategy. It provides managers with rich and relevant information about the organization's activities to improve the accountability and performance.
- **Strategic Management System**: the BSC offers a framework to design the strategic management system from four perspectives, which aligns the short-term actions with the strategy.

- **Communication Tool**: the BSC still has the power to translate the strategy to all employees. The understanding and acceptance of the strategy within the minds of organization's workforce are very important in this knowledge era, leading to the efficient and effective implementation of the strategy as well as organizational development by learning process.

Indeed, the three roles can't be separated from each other clearly, and sometimes they may overlap together. And Cobbold and Lawrie (2002) assert, the BSC can be used to support two distinct management activities: management control (a process by which management ensures that the organization carries out its strategies effectively and efficiently) and strategic control, which monitors whether or not the strategic plan made by the management team is the right one, and the extent to which the activities planned to achieve them have been undertaken and are working as expected. That is, the BSC can be used as one part of the strategic management system or a stand-alone tool of "strategic performance evaluation".

Originally, the SBSC is designed for linking social and environmental sustainability into the strategy toward corporate sustainability, which plays a role as strategic management system to form mechanism to improve the possibility of successful planning and implementing a strategy for an organization. However, the purpose of this research is to provide the governments a new model for evaluating and improving its sustainability performance, which ensues that the organization's overall goals and policy towards "sustainable development" are implemented. So, the SBSC should be adopted as the basic framework of SPES in government, that is, as a strategic performance evaluation instrument to assess sustainability performance of government and its agencies. Within the context of SPES, the SBSC will give us the advantage to integrate all aspects of the non-financial performance drivers or determinants, integrated sustainability performance and citizen participation in one organic system with cause-and-effect relationship. This logic frame is very valuable to determine the most important objectives and performance criteria, which will reinforce the strategic planning stage of SPES discussed in Chapter 3, and works well as a framework to identify indicators for SPES in Chapter 5.

4.1.2 Modifying the SBSC for Government

There are three possible approaches to integrate environmental and social aspects in the BSC: (1) integrating environmental and social aspects in the existing four standard perspectives; (2) adding an additional perspective to take environmental and social aspects into account; (3) formulating a specific environmental and/or social scorecard (Figge et al., 2002a; Hahn & Wagner, 2001). And Figge et al. (2002a) argue that it depends on the nature of the strategically relevant environmental and social aspects to formulate a SBSC for a business unit. Furthermore, for this study, to introduce the SBSC as a strategic management system towards corporate sustainability for the business sector into SPES in government, it is still necessary to

make some modification and improvement according to the change of mission and environment. If the BSC is uncritically implemented and used in the public management, it may lead to some unintended and possibly dysfunctional consequences (Johnsen, 2001). With the open, causal and balanced attributes, considering its successful development and application both in private and public sector, the BSC has powerful potential to be improved and implemented in public sustainability management.

For most non-profit and government organizations, it is difficult to use the original architecture of the BSC that places the financial perspective at the top of the hierarchy, because achieving financial success is not the primary objective for them (Kaplan & Norton, 2001). Niven (2003) points out that the right perspectives should be selected to better reflect the needs of organizations before the architecture of BSC. He also suggests that mission may appear at the top of the BSC as a fifth perspective to signify the socially important goals, and the customer perspective may be split, because there are clear distinctions between stakeholders and customers in the non-profit sector. The study in three selected public organizations in New Zealand shows, the BSC has been extensively modified by the case organizations to reflect the unique characteristics of the organizations: financial and customer quadrants were replaced by shareholder, stakeholders and leadership quadrants to reflect a wider accountability and a nonprofit focus in public sector (Griffiths, 2003). Bocci (2005) points out that, moving from profit-driven organizations to mission-oriented ones, the original architecture of the BSC has been modified to be adapted to different needs. He summarizes the main characteristics of the architectures proposed as follow: (1) a mission perspective is added; (2) citizen or community is considered as "customer"; (3) sometimes financial and the customer perspectives are placed on the same level; (4) sometimes an authority or a stakeholder perspective is added. In his model of BSC for the public healthcare, a mission perspective is added at the top of the BSC, and the "customer" is replaced by "community" perspective in a multidimensional way, and the financial perspective is put at the bottom of the BSC as a resource input measure.

During the modification of SBSC for SPES, the first problem is how to adapt the traditional BSC and SBSC rooted in the for-profit sector to fit for the government or non-profit agency. That is to say, the difference between private and public sector will be emphasized further to rectify the deleterious effect of NPM. Therefore, this study will adopt the third approach mentioned above, that is, to formulate a specific sustainability scorecard for SPES in government.

First of all, the mission of government should be given more attention, because the government is "mission-focused" organizations and has the responsibility to serve the citizen and promote the social development. The research by the Swedish National Audit Office emphasizes that the certain adjustments must be made when the BSC is used in the public sector, for example, the starting-point for the scorecard process should be the overall mission of the unit as defined by the government (Olve, Roy, & Wetter, 1999). Some researchers, such as Niven (2003) and Bocci (2005), suggest putting the mission perspective at the top of the BSC. This is a good step forward, but still not enough. When sustainable development is accepted

as national strategy, the mission of government has been reified to the tangible and three-dimensional sustainability objectives, which are considered to meet the needs of citizens in general. Therefore, SPES won't take the intangible mission as an individual perspective, but take three balanced perspectives of sustainable development at the top of the BSC. It is propitious to develop and select indicators in the following text. However, the architecture of SBSC will begin with the mission statement, which will identify the vision, strategy and primary objectives of sustainability management in government at the first stage of developing the SBSC.

Moreover, the customer perspective will be changed. The customer perspective of traditional BSC enables business unit manager to identify the customer and market segments, and transfer market-based strategy into measures that will deliver future financial returns. Influenced by the customer-orientation principle of NPM, many organizations rearrange the scorecard to place customers or constituents at the top of the hierarchy (Kaplan & Norton, 2001), which involves an increasing emphasis on improving the quality of services and determining how the organizations meet their responsibility and accountability. But the customer's metaphor is not suitable to represent the complexity of the relationships between public sector and citizenship (Bocci, 2005). According to "New Public Service", government should serve the citizen but not customer, because the citizen plays a multi-role as owner, customer, partner and so on. Considering the social dimension of sustainable development, the perspective relating to the citizens will be named social perspective, which replaces the customer perspective and reflects the social equity and citizen attitudes of the public service.

Finally, financial perspective will be removed from the top of the BSC. Because the public sector organizations pursue their mission to improve the society and do not consider financial profit as the first priority, Bocci (2005) argues that the financial perspective is an input for most public sector organizations. Some organizations already consider financial resources as an input or "managing financial resources" as a part of the internal processes perspective. One significant case is City of Charlotte (Niven, 2003; Bocci, 2005). Furthermore, economic growth and financial management are still the governmental functions in our time. Therefore, the SBSC for SPES will adopt the financial aspect in two perspectives separately: one part is put in the learning and growth perspective as an input for the public administration; the other is accepted as one of sustainability objectives to measure the economic performance.

4.1.3 Developing Process of SBSC

To develop a BSC, a typical for-profit business would first define its vision and consider the financial objectives required to achieve that vision. It would then determine what must be done to achieve its financial objectives and consider what processes it needs internally to deliver that service to its customers. And lastly, it would need to think about its own continuous improvement and development requirements (Irwin, 2002). Learning from the developing process of Kaplan and Norton's (1996a),

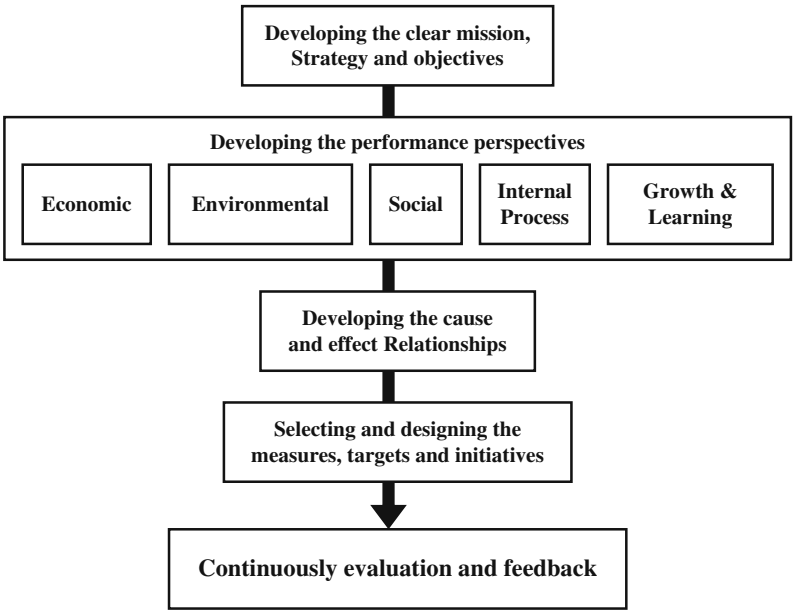

Fig. 4.1 Developing Flowchart of the Sustainability Balanced Scorecard

Wetter, Roy, and Olve (2000) and Niven (2002, 2003), four steps of developing the SBSC are outlined as follows (see Fig. 4.1):

Step 1: developing the clear mission, strategy and objectives of organizations. Because the organizations differ from each other, it is very important to identify the orientation according to respective conditions and environments.
Step 2: developing the performance perspectives. Within the context of SPES, social and environmental aspects will be brought into the traditional BSC, and to build up a five-perspective SBSC.
Step 3: developing the cause and effect relationships. The causality between desired outcomes and the performance drivers forms the basis of a logic structure and retests the key factors and measures across all perspectives.
Step 4: designing and selecting the measures, targets and initiatives. And then a scorecard will be finalized, used to support the sustainability performance evaluation in government.

4.2 Developing Strategy and Performance Objectives

The distinct character of BSC is "the scorecard puts strategy and vision, not control, at the center" (Kaplan & Norton, 1992), so, the first step of developing a BSC should start with the clearing mission and vision, which can ensure the strategy of organi-

zations to be translated into policy and action well and truly. Niven (2002) designs a "top-down" process of translating the mission down to objectives and measures, cooperated with the "bottom-up" feedback from the measures upward to the mission and core values. In this book, SBSC will follow the top-down process to formulate the mission and sustainable development strategy to the sustainability performance objectives for SPES.

4.2.1 Clearing the Mission and Strategy

In the for-profit enterprises with profit imperative, the financial success to improve the stakeholders' value is the final goal, and all the measures are designed and implied to meet this objective. But this is not the case for the public sector, which is to serve a higher purpose. For example, the government, performing the executive function of the state, has the primary character "Public" and mission-oriented, which makes it different from the profit-driven sector. In addition, to close the SG 1, SPES would extend the evaluation scope to ensure that the strategic planning can be under control, including the processes from definition of the mission to select the strategy and objectives. Thus, the architecture of SBSC will begin with the mission statement. As shown in Fig. 4.2, from the mission and values to vision and then strategy, there is a line to develop the objectives and measures of the BSC. Finally, strategy that represents the broad and overall priorities of the organization will be translated into action with some key objectives and measures.

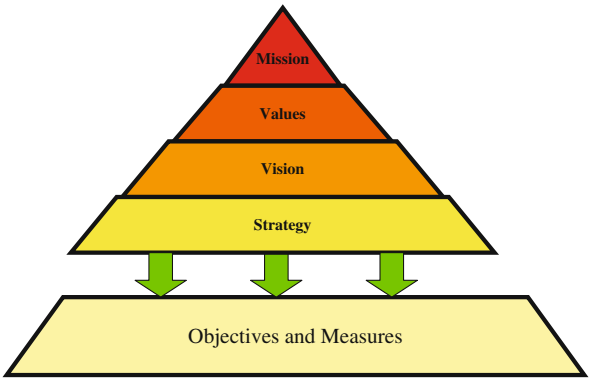

Fig. 4.2 Translating Mission, Values, Vision and Strategy into Objectives and Measures

4.2.1.1 Mission

According to Niven (2003), "a mission statement defines the core purpose of the organization – why it exists?" Just like polestar, the mission is the guide of

your orientation but you maybe never really touch it; just like the polestar, the mission is endurable (long-term) and will not be changed, so that you can follow its guidance to adjust your coordinates these should show you your position and make right decisions. And the effective mission should be simple, clear and easy to understand and communicate to ensure all employee work toward the mission.

The mission statement describes the true responsibility of the organizations, which can be used to distinguish between the private and public sector essentially. There is a wide range of theories on the reasons for establishing governments. Aristotle said that a good government seeks to advance the good of the people or "good life" of all citizens, which is called in other terms, such as, the "public interest", the "common good", the "social welfare" and the "public welfare" (McAllister, 1980). According to the social contract theory of Thomas Hobbes, John Locke and Jean-Jacques Rousseau, on which modern democracy and most forms of socialism are founded, the people create the government in order to meet the collective needs and "General Will". The relationship between government and the people is clearly stipulated in the constitution and administrative law as "social contract". Thus the governmental responsibility is established on the basis of the people's authorization according to the theory of "sovereign right of the people" (Ma, 2004; Wu, 2004; Xu, 2006). Table 4.1 contains some sample of mission statements from some local governments and departmental agencies in USA, which indicate that the mission of government is to serve the needs and wills of the people.

Table 4.1 Mission and Values of Some Local Government and Departmental Agencies in USA

Institution	Mission
Texas State Government[a]	To support and promote individual and community efforts to achieve and sustain social and economic prosperity for its citizens
City of Kalamazoo[b]	Doing our best work today and every day to make Kalamazoo the best city it can be tomorrow. (A livable and sustainable community for all citizens)
Northampton County[c]	To provide the necessary services to protect the health, safety, welfare, environment, and quality of life of our citizens consistent with the communities' values and priorities.
Cowlitz County[d]	Provide quality services as required by law or mandated by the public, to enhance the health, safety and general well-being of the citizens of Cowlitz County.
US EPA[e]	To protect human health and the environment

[a]See http://www.tsl.state.tx.us/pubs/stratplan01-05/govvision.html.
[b]See the homepage of Kalamazoo City at http://www.kalamazoocity.org.
[c]See the homepage of Northampton County at http://www.co.northampton.va.us
[d]See the homepage of Cowlitz County at http://www.co.cowlitz.wa.us.
[e]See the homepage of US EPA at http://www.epa.gov/epahome/aboutepa.htm.

4.2.1.2 Values

Values are the guiding principles and beliefs within the organization, which make an open proclamation about how it expects everyone to behave (Niven, 2003). They are demonstrated through the daily behaviors of the employees and used to guide the decision-making in every level of the organization. According to Byars' strategic management process, values are one part of the organization's mission in a broader sense, named "philosophy", which establishes the values, beliefs and guidelines for the manner in which the organization is going to conduct its business (Byars, 1984). That is, different to mission, it is not the orientation for the activities but value judgment of the activities, which steer the behavior manner and mechanics of the employees in an organization.

Public value is a term invented by Harvard professor Mark H. Moore in his book *Creating Public Value Strategic Management in Government* (Moore, 1995), which refers to the value created by government through services, laws regulation and other actions, and offers a useful way of setting out the ultimate objectives of public service and a yardstick for assessing activities produced or supported by government (Kelly, Mulgan, & Muers, 2002). And the public values of government relating to the public administration, as mentioned in Chapter 3, should focus on two aspects: improving accountability and performance. For example, the philosophy of Texas State Government is "State government will be ethical, accountable, and dedicated to serving the citizens of Texas well, and operate efficiently and spend the public's money wisely."[19]

4.2.1.3 Vision

A vision statement outlines a word and more concrete picture of what the organization intends ultimately to become in the future (Niven, 2002). It provides guidance on how to translate the mission and value to strategy. The effective vision statement should balance the internal and external elements, appeal to all stakeholders, and consistent with mission and values. Considering comparison with mission, the vision presents the further medium-term blue print in 10 or 15 years, so it is more concise, verifiable and feasible than mission (Niven, 2002).

For the government, the vision is a clear and concise statement that defines the ideal future state of the organization and the programs it implements. The vision describes the successful outcomes of the Agency's medium-term activities to gain more value for its ultimate beneficiary – the public. For example, in 2005 the city of Kalamazoo declares its vision: "In 2015, Kalamazoo will be . . . a regional center of cultural, educational, and economic activity and health care services. . . . Diversity will be a virtue. Kalamazoo's vitality will be sustainable with a balance among the needs of the environment, the economy, and the social needs of residents."[20] This 10-year plan shows us a much clearer blue print for this city.

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[19] As footnote "a" in Table 4.1.

[20] As Table footnote "b" in Table 4.1.

4.2.1.4 Strategy

Strategy, an art of military command initially, has been adopted by the businessman and politicians as a plan of action intended to accomplish a specific goal. Based on the mission, values and vision statement, strategy is about choosing a set of activities from different alternatives in pursuit of the mission (Niven, 2003). That is, it tells us "how to fulfill the mission", but relative to vision, it will be short-term and more practical. To develop the strategy for government, it is necessary to take two kinds of elements into account: one is the internal orientation, which reflects the requirement of mission-driven and accountability-focused organizations; the other is the external condition, such as political, economic, social and technological environment. So, after the analysis of stakeholders and environmental condition, such as Strong-Weakness- Opportunity-Threat (SWOT) analysis, a set of activities will be selected as the strategy. As introduced in Chapter 3, since the "strategic planning" approaches in government began to emerge in the 1960s, such as PPBS, the researches and practices of public strategic management have rapidly evolved over the past four decades. As the core of every BSC, the strategy is also the core of the SBSC of SPES, which identifies and defines the performance objectives step by step and represents in every measure, in light of the sustainable development principles.

4.2.2 Developing the Performance Objectives

After clearing the mission, values, vision and strategy, the performance objectives should be identified as specific targets of near-term outputs and outcomes that are to be achieved during strategy implementation. In broad sense, strategic plan includes all the approaches, not only including the mission and values, long-term and medium-term vision and short-term strategy, but also the near-term performance objective. They are highly interdependent and inseparable, and build up the integrated strategic objective system together. For example, the GPRA (US OBM, 1993), with the purpose of improving service delivery by proving new focus on results, service quality and customer satisfaction, requires all Federal agencies to develop periodic agency strategic plans, which contains: (1) a 5-year Strategic Plan which sets forth the agency's mission and long-term goals (vision); (2) annual Performance Plan to establish performance goals (objectives), measurable objectives associated resource requirement (budgeting). These strategic plans contain a set of goals or objectives, which will be used to measure and report the agency's performance by the annual Performance Report submitted to the President and Congress. In this sense, the performance objective is the result of the strategic planning process and the beginning of the strategy implementation, so it can be considered as a bridge between the strategy and actions.

From the mission to strategy and to objectives, the performance objectives are presented step by step, just like making a sculpture by cutting and shaping. When the redundant part was moved and the wanted sculpture was finished, we should think over, if the objectives follow the original design, if the preset objectives can

reflect the true essence of the organization's mission. It is just a problem this study tries to find a solution. At the same time, the efficient translation is the key to build the BSC (Niven, 2002). During developing the objectives and measures, it is essential to examine critically them in the context of the mission of the organization, in order to ensure that they are consistent with that purpose. So, within the context of SPES in government, the SBSC in this book is designed to control the strategic planning process and ensure the faithful translation from the mission, values, vision and strategy into performance objectives and measures. However, the objectives, which serve the purpose of further defining the performance measures by addressing the critical issues, need not be in a quantitative or measurable form, but they must be expressed in a manner that allows a future assessment of whether each is being achieved.

Due to the extension of evaluation scope from three dimensions, the performance objectives are broadened, too. Firstly, to close the SG 1, the evaluation scope extends from results to determinants, i.e. the performance objectives move beyond the primary objectives to secondary objectives including the internal process and organizational development. Moreover, the definition of results extends from direct outputs to outcomes and finally to impacts, which reflect the requirement of mission-focused organization, that is, the result-based evaluation should ensure the results or impacts consistent with the mission, values, vision and strategy of the organizations. In other words, the integration of impacts into the results is additional way to ensure the faithful translation, especially when the causalities between the outcome and impact are explicit and irrefutable. It indicates that the primary objectives of public administration in government should be arranged on two levels: managerial outcomes and social impacts (including both general social objective and special policy objectives such as environmental protection). There are some cause-and-effect relationships between managerial outcomes and social impact, which facilitate to identify the objectives and measures and achieve the mission well and truly. Due to the social functions of government, the social impacts of the governmental behavior should be noticed particularly, which reflects the public accountability of the government to the public or citizens. Within the context of sustainable development, the performance objectives will be adjusted to meet the requirement of sustainable development, i.e., the sustainability objectives, which will be addressed in the next section.

4.2.3 Sustainability Objectives

As one typical public sector, government has multi-administrative objectives. According to Eichhorn (2002), the public interest (commonwealth) determines the political objectives and the public tasks, which control the public activities by setting some performance objectives. When the sustainable development was accepted in most developed countries and some developing countries, the national sustainable development strategies (NSDS) are developed as mechanisms for translating a

country's goals of sustainable development into concrete policies and actions, too. So, the performance objectives will be improved to sustainability objectives, which reflect the public welfare between the generations.

4.2.3.1 Concept and Models of Sustainable Development

When NSDS was adopted as precondition, which answers for the mission and values of the national government, the performance evaluation should be guided by a clear vision of sustainable development (Keiner, 2005). That is, under this background, the identification of performance objectives will begin with the understanding of sustainable development. While many definitions of the sustainable development have been introduced over the years, the most commonly cited definition comes from the report *Our Common Future*, more commonly known as the *Brundtland Report* (WCED, 1987). Since Rio Earth Summit in 1992, the understanding of sustainable development has moved further from the national environmental strategy to the integrated strategy encompassing the social, economic and environmental (SEE) aspects. In order to offer a more workable interpretation of the principle of sustainable development, some models have been developed to translate the profound sustainable development concept into social action in a simplified way.

The most popular model is the triangle of environmental (conservation), economic (growth) and social (equity) dimensions, called "three pillars" or "three circles model" (Simonis, 2003; Keiner, 2005), which sets economic, social and ecological goals on three different corners without a hierarchy between them. It has received wide acceptance and recognition by practitioners and academics around the world. According to Birkmann and Gleisenstein (2002), besides the triangle model, there is another model or pre-analytic vision of sustainable development, the egg model. The "Egg of Sustainability" illustrates the relationship between people and ecosystem as one circle inside another, like the yolk of an egg. It was originally designed by the International Union for the Conservation of Nature in 1994, and adopted by the International Development Research Center to replace the graphics of three pillars or interlocking circles of society, economy, and environment. Busch-Lüty proposes a similar egg, placing "economy" and "society" instead of "people" in the yolk (Keiner, 2005; Birkmann & Gleisenstein, 2002).

These two models are quite different from each other. While the triangle model can lead to a very isolated and coordinative definition of economic, social and environmental goals, the egg of sustainability implies a closer dependence or interconnectedness among these three dimensions, just as an egg is good only if the white, yolk and eggshell are good, healthy and sustainable. That is, the goals of the social systems need to take the surrounding environmental sphere into account, while the economy as a subsystem of the society needs to focus on the social goals as a framework for its own objectives (Birkmann & Gleisenstein, 2002). Moreover, there is also a model that combines the three circles and the egg models: the three circles representing economic, social, and ecological aspects are part of a larger human systems grouping (the yolk), which in turn is surrounded by a natural system (the white) (CESD, 2001b).

In recent years, another alternative model to replace the triangle of sustainability has been proposed: the "prism of sustainable development", adapted from the Wuppertal school (Keiner, 2005). Besides the SEE dimensions, this model stipulates the fourth dimension: the institutional dimension, in order to accommodate a significant number of crucial social and cultural elements of *Agenda 21* (Spangenberg, Pfahl, & Deller, 2000). This extension indicates that sustainable development is not only any kind of development towards the objectives of reconciling economic, social and environmental needs, but also the process called for new institutions and new patterns of governance, and even established new institutional patterns and procedures. Moreover, the prism provides a framework capable of accommodating the vast majority of sustainable development concepts and their balanced inter-linkages, aimed at avoiding irreversible damage in either dimension with equal emphasis (Spangenberg, 2002).

Although all the models shown are too simple abstractions from reality, they are widely used in spatial planning to argue and to defend development options. Such as, a UN *International Forum on National Strategies for Sustainable Development* in 2001 agreed a guidance, which confirms that sustainable development has three principal dimensions: economic growth, social equity and protection of the environment. Moreover, a four-category indicator system (social, economic, environmental and institutional) has been accepted by United Nations Commission on Sustainable Development (UNCSD). And as the testing process clearly demonstrated that the institutional area needs further development and refinement in comparison with the other three dimensions (UN DESA, 2001). About the sustainable development indicators and its four categories will be discussed further in Chapter 5.

4.2.3.2 Performance Objectives of Sustainable Development as National Strategy

The previous three models give us a clear vision of sustainable development, guiding the performance evaluation to determine the sustainability performance objectives. The first two models reflect the traditional understanding of sustainability objectives, that is, including the SEE objectives in a balanced and integrated manner. The prism of sustainability adds the fourth pillar "institutional dimension" to match the institutional demands of sustainable development. So some procedural sustainability criteria, many of them institutional, are brought into the sustainability objectives (Spangenberg, 2002). Even though none of the UN working documents provides a clear explanation of the theory and methodology behind institutional indicators (Spangenberg et al., 2000), this innovation indicates the necessity and feasibility to extend the performance objectives from the SEE primary objectives to the institutional objectives that determine the achievement of sustainable development. Within the context of SPES, which tries to extend the evaluation scope to the internal process and organizational development, the prism model is very meaningful as reference to identify the sustainability objectives. That is, the sustainability objectives can be divided into two levels: one is the primary objective including the SEE

objectives; the second level is the secondary objectives, which determine the achievement of the primary objectives.

The primary sustainability objectives are identical with the three principal dimensions: economic growth, social equity and environment protection (UN DESA, 2002):

- **Economic growth:** Society's well-being would be maximized and poverty eradicated through the optimal and efficient use of natural resources. Particularly, the overriding priority should be given to the basic needs of the world's poor people.
- **Social equity:** This component refers to the relationship between nature and human beings, uplifting the welfare of people, improving access to basic health and education services, fulfilling minimum standards of security and respect for human rights, too.
- **Environmental protection:** It is concerned with the conservation and enhancement of the physical and biological resource base and eco-systems.

The above three dimensions of "Sustainable Development" as national strategy are interdependent and interactional. For example, the issue of "equity" involved the distribution of benefits and access to resources remains an essential component of both the economic and social dimensions of sustainable development. And during the transformation of nature resource to meet basic needs and material conveniences of everyday life, the economy grows, and the natural environment is depleted with result in air pollution, climate change and biodiversity loss. So, at the heart of implementing sustainable development is the challenge of establishing the right balance among the three-dimensional goals (UN DESA, 2002). Therefore, to achieve three-dimensional economic, environmental and social objectives in a balanced and integrated manner will be accepted as the primary sustainability objectives of SBSC.

Besides the primary objectives, the secondary objectives are brought into the objective system, which will facilitate the achievement of those primary objectives. But these objectives are more than the institutional objectives, but include both input and process elements. They can ensure the organizational sustainability by improving the internal process and strengthening the organizational capability. The details will be discussed during developing the perspectives "Internal process" and "Growth and learning".

4.3 Developing the Perspectives of SBSC

By encouraging managers to focus on a limited number of measures, the performance objectives and measures would be grouped in the BSC. These groups were named "perspectives" by Kaplan and Norton, who coined four-perspectives model (Financial, Customer, Internal Processes, Learning and Growth) to provide managers with richer and more relevant information about organizational performance

and key strategic goals (Lawrie, Cobbold, & Marschall, 2003). Niven (2003) argues that a fundamental question to ask prior to building the BSC is which perspective will be used to tell the story of the strategy.

As mentioned in Chapter 3, the evaluation scope of SPES would extend from three dimensions: horizontal (from financial to non-financial or sustainability performance), vertical (from results to determinants) and deep (from outcomes to impacts). The vertical extension reflects on the application of BSC, which adopts the internal process, growth and learning perspectives as determinants besides the results. The horizontal extension leads the results to spread from financial and customer perspectives to the SEE sustainability perspectives. The deep extension of performance will be embodied inside of the three sustainability perspectives, that is, not only measuring the outcomes but also the impacts on the social, economic and environmental conditions. Therefore, some perspective concerning social and environmental issues will be added to the traditional BSC.

This research will establish a five-perspective model that integrates all three dimensions of sustainability in the new system. In the five perspectives, the environmental perspective is a relative new one, and the financial and customer perspectives are replaced by the economic and social perspectives, but the internal process and learning and growth will keep the same name of the traditional BSC (see Fig. 4.3). Simply changing the name of these perspectives makes a huge difference, not only in the three results perspectives, but also in the two determinant perspectives. Therefore, the introduction will go with some comparisons between the new model and traditional perspectives concerned. In addition, this section will introduce the five perspectives in these two groups according to the two-category performance objectives: primary objectives (SEE) and secondary objectives (internal processes, innovation and learning).

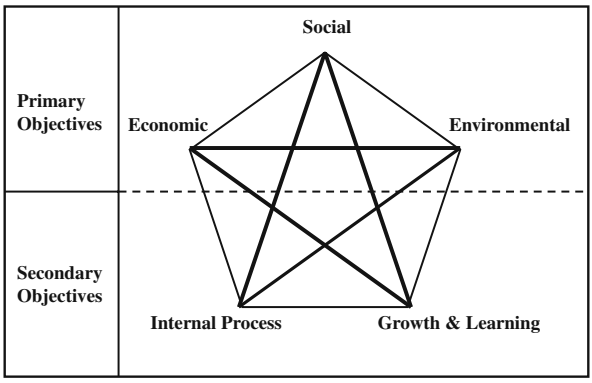

Fig. 4.3 Five Perspectives of SBSC for SPES

4.3.1 Three-Dimensional Primary Perspectives

Just like the argument of Atkinson and McCrindell (1997), the primary objectives respond to the needs of the stakeholders. So, first of all, the first group "primary objectives" should identify whom the organization aims to serve and how to meet their requirements. All businesses have three important groups of stakeholders: the customers, the staff and the owners (shareholder) (Irwin, 2002). In the traditional BSC, the three stakeholders' interests are taken into account by different perspectives according to their own expectations: the owner's interest is described as the long-term financial success and transferred into "financial perspectives" as the final goals of for-profit bushiness units. The staff expects realistic rewards for their efforts, career and development opportunities and an environment in which they are happy to work, so the interest is considered in the perspective of learning and growth. And because Kaplan and Norton (1996a) want to emphasize the shifting of companies' focus from internal capabilities (product performance and technology innovation) to external customers by understanding the customers' needs eventually, the customer aspect is put into an individual perspective named "customer perspective", in which companies identify the target customers and market segments. However, Brignall (2002) argues that the BSC as the best known model of "integrated" and "balanced" multidimensional performance measurement (MDPM) still have an unbalanced limitation, that is, the social and environmental aspects aren't taken into account of the system. In order to cater for the needs of all significant organizational stakeholders, he suggests to "rebalance" the BSC by incorporating social and environmental aspects as a separate organizational performance perspective.

Within the context of SPES, the original framework of BSC should be improved to fit different functions of mission-oriented public sector. According to the above statement, the government's mission is to meet the needs of the public or citizens, so it is essential for the government to measure the satisfaction of citizens to retain and expand its political force due to the political accountability or election pressure. Because of the technical limitations of the subjective judgment, "citizen satisfaction" is formulated into three tangible principles of sustainable development: social equity, economic growth, and environmental protection, which reflect the public needs concerning sustainable development between generations. In another word, this research is based on the assumption that the achievement of the three primary objectives can enable the citizen satisfaction. Therefore, the three primary perspectives consistent with the principles of NSDS reflect the needs of the citizens in nature.

Moreover, the SPES extends its evaluation scope from outcomes to the impacts of the public policy and service, which helps us better understand the extent to which activities reach the poor and magnitude of their effects on people's welfare. Both outcomes and impacts build up the macro-micro linkage, and indicate the substantive effectiveness of the governmental administrations. So, in the first group of primary objectives, each primary objective will be arranged on two levels: impacts and outcomes. The impact evaluation provides the macro information about the progress

towards sustainable development, while the outcome objective measures the micro administrative performance. Between them, there is some cause-and-effect relationship, but still influenced by the other physical and social environment elements that can't be controlled by human being.

4.3.1.1 Social Perspective

If the business units want to achieve long-run superior financial value of stakeholders, they must create and deliver products and services to satisfy and delight customer. Influenced by the NPM movement, public service is considered as some kinds of public goods supplied to the citizens, who play the role of customers. So, in some BSC of public sector, the customer is accepted as one perspective, which relates to social acceptance to accomplish the mission of organization such as the BSC of Niven (2003) for government and non-profit organizations, in which the customer perspective is elevated to the top of the framework. Bocci (2005) argues that citizens have a multi-dimensional stakeholder role to play in their relationship with public sector, and depicts the "community perspective" in four dimensions (Citizen as Customer, Owner, Subject to laws, Partner) to replace the customer perspective, which can be used to enhance the multi-dimensional public management goals. Furthermore, Bieker (2003) uses the "society perspective" to incorporate the social responsibility into the SBSC, and selects the "good relationship to the neighborhood", "improvement of the quality of life in the region" and "development of a sponsoring concept" as the strategic society-related goals. Besides the customer perspective, Figge, Hahn, Schaltegger, and Wagner (2002b) adds the fifth perspective "non-market" to identify the environmental and social impacts to the success of organizations. However, these SBSC models are designed for the for-profit enterprises and still put the financial goal on top of the BSC. Sometimes, besides customer perspective, a society-related perspective presents itself, but just as the supporting measures and background information to seek for the financial success.

To sum up, the current models still have limitations to meet the requirement of social sustainability objectives in government. First of all, the customer's metaphor is not suitable to represent the complexity of the relationships between public sector and citizens, and even may lead the misunderstanding and mistranslation of the government's mission. In order to incorporate the needs of citizens as customer, owner and partner, "social perspective" will replace the traditional "customer perspective" in this book, which can reflect the social responsibility of government and social sustainability objectives truly and well. As mentioned above, each primary objective is arranged on two levels: impacts and outcomes. Thus, based on the "customer perspective" of the traditional BSC, a social perspective will be developed to measure the social impacts and managerial outcomes of social policy and public service concerned. Due to the technical limitations, the social impacts are formulated into social equity, in line with the social principle of sustainable development.

Social Equity

The range of terms associated with the social dimension is so broad that the literature indicates that it can encompass many aspects, for example, health, education, ethics, equity, beliefs, diversity, indigenous people, safety, intergenerational equity and poverty. Within the context of sustainable development, considering the function of government of protecting human beings' natural rights, the government's approach to sustainable development recognizes basic social values such as equity and the right to an adequate quality of life (CESD, 2001a). So "social equity" is accepted as one of three principal dimensions of sustainable development (UN DESA, 2002).

Social equity refers to fair access to services, equal treatment for equal needs, targeted services for particular needs, i.e., all of the citizens can have fair opportunity to access the public service. And it also involves improving and maintaining the quality of life for people without compromising the ability of future generations to meet their own needs. It seeks to ensure quality of life over the long term as well (CESD, 2001a). Therefore, social equity provides a formal objective of social condition, which relate to the relationship of inter-generation and intra-generation. Moreover, quality of life and social welfare are determined by many substantive factors such as health, education, cultural diversity, the vibrancy of communities, environmental quality and so on. UNCSD made a three-level theme indicator framework, in which the equity, health, education, housing, security, population were selected as the theme of social sustainability (See Appendix B). With the cooperation of the UN, OECD and World Bank, the "World Development Indicators" argue that the international goals focus on reducing poverty; achieving universal primary education, gender equality in enrolments in primary and secondary education and drastic cuts in infant and child mortality rates (Warhusrt, 2002).

Social Performance

To achieve the social sustainability, the government has the responsibility to improve the social welfare and equity through its public policy and service. And to track, assess, and communicate its progress toward a sustainable society, it needs to be able to measure its progress on implementing national and international commitments (CESD, 2001a). So, the public activities concerning social issues should be measured to strengthen so-called "accountability for performance". Within the context of RBM, the performance evaluation measures the social managerial outcomes against the objectives identified during the strategic planning stage, in order to control and monitor the efficiency and substantive effectiveness of administrative behaviors in government.

4.3.1.2 Environmental Perspective

The integration of the BSC with the environmental management is not a new idea. When, Kaplan and Norton (1996a) presented the four perspectives, they pointed

out that it should be a template, not a strait jacket. Among the examples they gave us, there was one about the environmental consideration in a chemicals company. The top managers of this company emphasized the outstanding environmental and communication performance as a central part of its strategy and "had to be an integral part of its BSC" (Kaplan & Norton, 1996a). The attempts of integration between ISO 14031 and BSC show us the feasibility to contain environmental issues into the BSC, while the SBSC shows the successful experiences of integrating the three-dimensional objectives of sustainable development into one system for the for-profit sector. In this book, environmental aspect is adopted as one primary objective in an individual perspective to respond the requirement of environmental sustainability.

According to the conceptual framework of SPES, the new system adopts the BSC and principle method building on the platform of ISO 14031. That is, the objectives and measures in "environmental perspective" would learn more from ISO 14031, such as, the indicator system, which divides the key environmental goals or measurers into two groups: environmental condition and environmental performance. Therefore, the objectives of environmental perspective would be arranged on two levels: environmental condition (impacts of environmental protection) and environmental performance (outcomes of environmental management).

Environmental Condition

According to ISO 14031, environmental condition indicators (ECIs) represent information about the local, regional, national and global condition of the environment caused directly by its own activities, products and services (Wathey & O'reilly, 2000). The ECIs can determine the significant environmental aspects and a need for action, giving directions to select management performance indicators and operative performance indicators. And it is the most important that they explore the possible relationships between the environment condition and the activities of an organization, which establish a "micro-macro linkages" between the environmental performance and changes in the environmental condition (Seifert, 2005). In the three-level Theme Indicator Framework of UNCSD, the Atmosphere (Climate Change, Air Quality), Land, Oceans, Seas and Coasts, Fresh Water (Water Quality), Biodiversity (Ecosystem, Species) are selected as the theme of environmental sustainability (see Appendix B).

Environmental Performance

To fulfill the environmental impact objectives, organizations should make some efforts, which can be set as specific progress towards targets in the environmental policy or planning. Some indicators for the business enterprises provide an assessment of the linkages between industrial processes and the natural environment. For example, the MPIs of ISO 14031 provides information about the management efforts to influence the organization's environmental performance, such as, number of prevention-of-pollution initiatives implemented (Wathey & O'reilly, 2000),

environmental costs or budget per year, percentage of environmental targets achievement (Putnam, 2002). As the policy-maker and mangers of public resource, government has the responsibility to monitor and report the managerial performance concerning the environmental issues. For example, US EPA makes a strategic planning for 5 years and annual performance objective according to the GPRA 1993, and reports the environmental results to the President and the public.

4.3.1.3 Economic Perspective

The profit-seeking business sector monitors the accountability for their capital providers (shareholders) through the results attained in the financial perspective of the BSC, which serves as ultimate targets for the objectives and measures of all the other scorecard perspectives. In the SBSC for SPES, financial perspective will be removed from the top of the BSC, because the government acts to pursue its mission to serve the citizen and financial rewards are not first priority. However, within the context of NSDS, there is still one of the three-dimensional primary objectives concerning economic growth, that is, economic issues should be given attention too. This objective has moved beyond the financial objectives for the stakeholders' value, and reflects the true meanings of public responsibility for the commonwealth, so "economic perspective" will replace the "financial perspective" as one part of the primary economic objectives in the SBSC of SPES. At the same time, SBSC will measure the efforts of governmental management concerning economic growth, so that the financial aspect will also be adopted as economic issues to measure the financial outcomes of public policy and budgeting.

Economic Growth

In today's economic society, long-term economic growth is still an important objective of commonwealth, that is, social welfare would have to be maximized through the optimal and efficient use of natural resources. To support economic performance within the context of sustainable development, the human beings should commit themselves to pursue economic development in ways of protecting the Earth's environment and limited resources. *Agenda 21* recommends trade liberalization making trade and environment mutually supportive, more sustainable consumption and production patterns, and encouraging macroeconomic policies favorable to environment and development. Several indicators and indicator sets were selected for the economic growth and commonly used as measures at international and national levels. For instance, "GDP per capita" is a standard measure of basic economic growth, while "investment share in GDP" shows the level of financial capital available to stimulate economic development (UN DESA, 2001). For the developing countries, economic growth is still the primary goals, which brings the higher living standard and social development, as well as considerable challenges to social equity and environmental degradation.

Financial Performance

In the public sector, the clarity of a financial bottom line does not exist, but it is equally essential that everyone in the organization has a clear understanding of strategy, and their role in achieving it (Irwin, 2002). Due to "Market Failure" and influence by Keynesianism, government began to serve "state intervention" on economic growth and development in most free-market countries. Thus, the government still has the responsibility to economic policy and financial management at national or local level. Within the context of RBM, the strategic planning integrates with the budgeting to improve the ability to assess agency's program and adjust program strategies and make sound budget decisions. That is, the exiting performance evaluation system in government emphasizes still on the financial perspective, and the evaluation findings are available to support and to influence budget decision-making. The assessment of "Value for Money" enhances the accountability of government at the central and local levels, and promotes the financial performance as well as the managerial performance.

4.3.2 Secondary Perspectives

To close the SG 1, some researchers propose the secondary objectives (or determinants, performance drivers), which can drive or enable the achievement of the previous primary objectives. According to the traditional BSC, they are grouped in two perspectives: the internal process, learning and growth, which can ensure the strategy to be formulated and translated into the right performance objectives and measures.

4.3.2.1 Internal Process Perspective

After formulating objectives and measures for the primary perspectives, managers will focus on the internal processes that are most critical for achieving primary objectives. Kaplan and Norton's BSC defines a complete internal-business-process value chain, which starts with identifying of the customer needs, proceeds through the innovation, operations and post sale service process, and finally ends with the customer satisfaction. It represents one of the sharpest distinctions between the BSC and the traditional performance evaluation system. That is, the focus of the internal process extends from the controlling and improving existing operating process to a more comprehensive, cross-functional and integrated process which provide multiple measurements beyond the traditional measurement of financial results (Kaplan & Norton, 1996a).

"Every organization is different, and will derive value from a different combination of processes." (Niven, 2003) Thus, the measures in the internal process perspective should flow directly from the stakeholders' goals. To achieve the sustainable development as national strategy, government and its agencies must design a new process to achieve the three-dimensional primary objectives and then satisfy

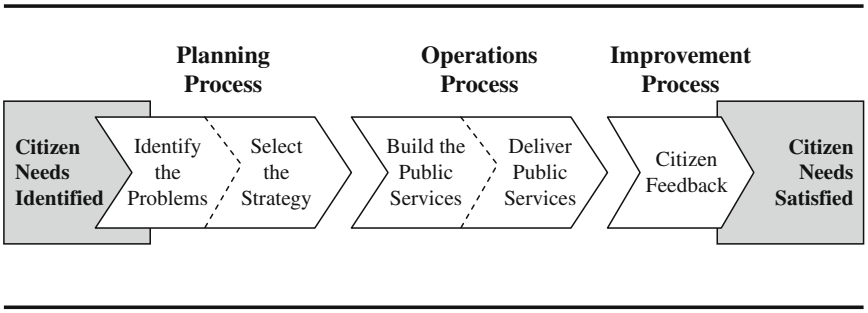

Fig. 4.4 The Value-Chain Model of Internal Process Perspective. Adopted from Kaplan and Norton (1996a)

citizen, which should also be put under control. The research on NSDS in 19 countries by IISD shows that process (output) monitoring is a fundamental part, which tracks progress directed at achieving sustainable development strategy objectives. In order to ensure the sound strategic translation, the internal process should compass all activities, starting with the strategic planning to the strategy implementation and then the feedback and improvement. Learning from the internal-business-process value chain of Kaplan and Norton, the value-chain model of internal process perspective for SPES is designed as follows, which encompasses three principal processes: planning, operations and improvement (see Fig. 4.4).

Planning Process

The SPES in government begins to focus on the strategic planning process to ensure that the performance objectives can reflect the true mission, values, vision and strategy of government that responds to the new needs of citizens. Therefore, the identification of citizen needs is the start of the value creation process in government. As shown in Fig. 4.4, after determining the needs of citizens, the planning process consists of two components: identify the problems, and then to select the strategy from several alternatives. During the planning process, the sustainability considerations should be incorporated into broader decision-making processes and under the control of SPES. Due to the environmental uncertainty and bounded rationality of the decision-maker, it is very difficult to measure the rationality of the plan itself. But the planning process control is valuable to ensure the formal efficacy of the mission statement and strategy development, and to control the substantive effectiveness of strategic planning indirectly. When the evaluator wants to establish the SBSC in an organization, where there is a mission statement and strategy made by the top level already, it is essential and feasible to integrate the planning process (from mission statement to objective setting) into the internal process of the BSC to control if the true essence of the mission and strategy of the organization has been translated into the performance objectives.

Operations Process

Operations process represents the process of delivering the existing products and services to the customers. Besides the cost and financial measurements, the quality, productivity, and time measures have been defined and developed for these business processes (Kaplan & Norton, 1996a). For the internal process of government, the operations process helps build and deliver public services to the citizens. Operational excellence will demand a concentration on processes affecting cost, quality and timeliness of current public service offerings. In addition to these measurements, managers may wish to measure additional characteristics of the operations process, such as, the energy consumption during the public administrative behaviors, which relates to both the process quality and the environmental objective.

Improvement Process

The final stage in the internal value chain is to check and improve the public service performance. The mission-oriented government will place a spotlight on citizen feedback and their ability to learn more about their targeted clients. In order to get the feedback information of planning/operations process and monitor the satisfaction of key external stakeholders, such as customers, investors, employees, legislators, suppliers, the media and the community at large, a well-targeted communication approach has to be designed. At the same time, the improvement process needs a good internal communication and institutional structure, which can ensure the information to be delivered efficiently and timely throughout the organization.

Citizen Participation

As described in Chapter 3, the processes of citizen participation in the strategic planning and implementation process can move the gaps between excellent performance and citizen satisfaction to ensure the long-term success of public sector. So, the government and its departments are required to conduct consultations with clients, partners and other stakeholders during the strategic planning and setting performance targets, reporting the results and feedback. In Canada, the *Guide to Green Government* recommends that departments include in their strategy a description of the multi-stakeholder consultation process and a discussion of how stakeholder feedback has been taken into consideration to support the policy and regulatory development process (Stratos Inc., 2004a). As a communication tool, BSC not only can be used to translate the strategy to all employees (Niven, 2002, 2003), but also has the power to share information with the external interested parties to build trust, credibility and partnerships, to raise awareness, and to use in decision making. Therefore, to promote its internalization and institutionalization, the citizen participation should and can be brought into the internal process perspective, which may help public managers stay focused on what really reflects the needs and concerns of citizens, and increase the impact of performance evaluation by encouraging manager

to look beyond traditional outcome measures and focus on quality of life issues and community goals instead.

4.3.2.2 Learning and Growth Perspective

To achieve long-term success, the BSC emphasizes the importance of the investment for the future, and develops the objectives and measures to deliver the organizational sustainability in the learning and growth perspective, which provides the foundation to achieve the objectives of the other four perspectives (Kaplan & Norton, 1996a). In the public sector, the purpose of public accountability lies more in maintaining and strengthening the learning capacity of the public administration (Bovens, 2006). The neglect of organizational capability and development may lead to immeasurable risk in the future, so that the government must pay attention to the infrastructure investment in personal, institutional and technical besides the financial aspect. In the BSC for a local healthcare authority designed by Bocci (2005), three capitals (human, information and organization) are put in the learning and growth perspective besides the financial resources. The learning and growth in the SBSC of SPES will contain all necessary infrastructure elements to achieve the organizational sustainability, including the employee capability, institutional system and information system as well as the financial investment. All of them will be considered as the input measures of the SBSC.

Employee Capability

One character of the NPM movement is the emphasis of organic management styles and humanistic strategies in the public sector (Gruening, 2001), which is against Max Weber's bureaucratic ideal of "impersonality" (Elwell, 1996), and advocates to inspire the individual motivation and to develop the employee capability. The employee capability in public sector is the core measure of the organizational learning and growth, and consists of employee satisfaction and employee training. Niven (2002, 2003) thinks that employee learning and growth perspective is the "enablers" of the other perspectives under the background of knowledge economy, and emphasizes some key ingredients, such as, skilled motivated employees, operating with the right tools in an organizational climate that provides the conditions of success. Those works together to develop the human capital in government.

Institutional System

Even though the NPM is regards as a set of measures designed to reform traditional Weberian bureaucracies in order to make them more flexible and efficient (Tompson, 2007), it is still necessary to build up an institutional system which explicitly states the duties, responsibilities, standardized procedures and conducts of employees in the organization. In this sense, the written regulations and unwritten conduct mechanics inside of the organizations support the successful translation of the strategy into actions. As the above mentioned, the prism of sustainability con-

tains one pillar named "institutional" and some institutional indicators have been developed and implemented as one part of the sustainable development indicators.

Information System

Due to the challenges of internal/external communication and the development of information technology, it is now necessary to introduce new information system to the public administration, integrating with every process, from planning, operations to improvement, which can improve the performance by facilitating the information processing and service delivery, and strengthen the accountability by efficient communication within and without the organizations. So far, it influences the organizational system and personal management deeply, even arouses a revolution of E-government in many countries. ISO 14063:2006 offers guidance for both internal and external environmental communication to work with planning, performing, following up and improving (Piper, Ryding, & Henricson, 2003), which can be use for reference to information system.

Financial Investment

The SBSC of SPES moves the financial aspect from the top and separates it in two perspectives, and one part is put in the learning and growth perspective as input measure for the public administration. For the government, profit is not the final goal any more, but it is still one target to achieve the preset objectives with minimal expenditure. In order to realize the sustainable development, the integration between strategic planning and budgeting is needed, which challenges us to rethink the financial expenditure. The budget constraint is addressed in conjunction with environmental and social issues, while cost reduction and resource utilization efficiency become the financial objectives as input measure.

The previous four measures are interdependent, for instance, the employee capability determines the efficiency of organizational operations and technique capability building, the internal institutions and mechanics create the internal climate for the development of employee capability and technical innovation, the rapid technological change requires the employee training and regulation adjustment in a continuous learning mode, and financial investment supports the other measures with the most important capital resources. Moreover, human, technical and financial resource should be assured to support the institutional reform, so that new institutional patterns and procedures can be put into effect, and then the national strategy sustainable development can be translated into action well and truly. All of these measures build up the software and hardware infrastructure for the internal process and these primary objectives. For example, the institutionalization of citizen participation can improve the substantive rationality of decision-making with the help of IT technique, which can facilitate the internal and external communication to improve employee satisfaction and citizen relationship. In short, the secondary perspectives of SBSC, including the internal process and learning and growth, work together to identify the key performance factors and measures that facilitate the

achievement of the primary objectives and provide the framework for the indicator selection in the next chapter.

4.4 Cause-and-Effect Relationships of Perspectives

Kaplan and Norton (1996a) define "strategy is a set of hypotheses about cause and effect." A well-designed BSC thus should describe the strategy through the objectives and measures, which link together in a chain of cause-and-effect relationships. This causality of the BSC provides us the logic relationships across and within the perspectives, which can ensure the strategy to be exactly translated into actions. At the same time, this relationship can help us identify the most important objectives and measures, which will be essential to design and select the indicators for SPES.

4.4.1 Cause-and-Effect Relationships Within Primary Perspectives

Even though the three primary perspectives outline the principal dimensions of sustainable development separately, they are interdependent and linked. Sometimes some key measures relate to elements shared by two even three components. For example, "living environment", which indicates social conditions of the citizen, relates to the environmental issue at the same time. "Resource consumption" is an ecological factor, but all intimately connected to production and economic growth. And "poverty" represents a considerable challenge to ensure that economic growth leads to social equity and does not contribute to environmental degradation (see Fig. 4.5).

Moreover, there are cause-and-effect relationships among the key factors within the three perspectives. Such as, the environment provides the resource as raw materials for the production, which create the social wealth and improve the living standard. The improvement of living condition includes the better education and public healthcare, as well as continually increased consumption of the products and nature resource, which leads to the environment pollution and climate change. Even the overspending the nature resources will damage the living environment and human health. These causalities lay the foundations for the Pressure-State-Response (PSR) framework to develop and select the sustainable development indicators.

For example, the research of relationships among environment, poverty and health by the World Bank in 2002 (Lvovsky, 2002) shows, environmental factor is a significant determinant of health and illness, especially in poor countries. Environmental health risks can thus be grouped into two broad categories in general: the traditional hazards related to poverty and weak development, such as lacking safe water, inadequate sanitation and waste disposal, indoor air pollution, and vector-borne diseases; while the modern hazards such as urban air pollution and exposure to agro-industrial chemicals caused by development without environmental safeguards. The poor of this world are increasingly experiencing the "double burden"

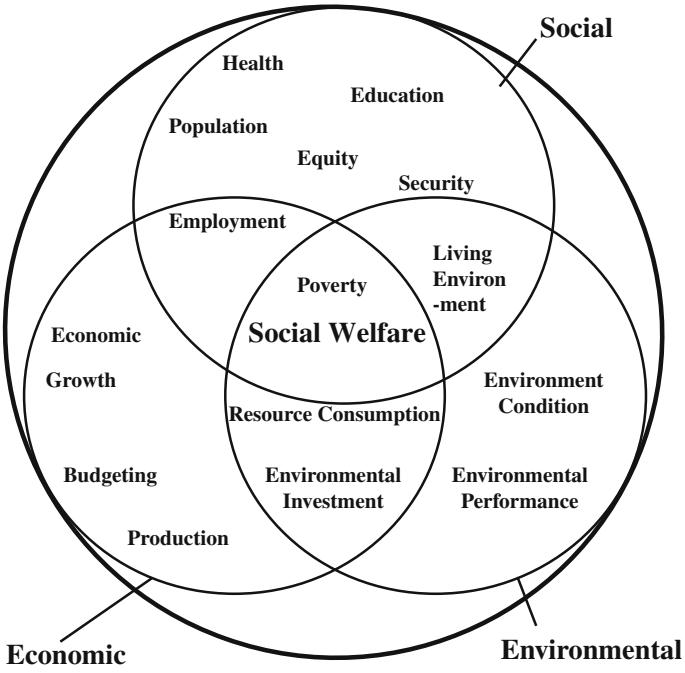

Fig. 4.5 Relationship of Key Factors Among Three Primary Perspectives Note: The concept of sustainable development is relevant to a very wide range of issues, so this figure just outlines some key issues to show the relationships among three primary perspectives

of both traditional and modern environmental health risks. The linkages between poor environmental health and other dimensions of poverty are complex and multiple, reinforcing each other in various ways, even in a vicious spiral form. Through the analysis of causality, the key measures for mitigating the most daunting environmental risks to health can be identified, such as, better infrastructure and energy services for households and communities, improvements in water and sanitation, household energy, housing, vector control and pollution management.

4.4.2 Cause-and-Effect Relationships Across Five Perspectives

Developing cause-and-effect linkages across perspectives is a challenge for any BSC, which builds an explicit and seamless integration of results and the performance drivers so that they can be managed and validated. Hahn and Wagner (2001) point out that SBSC provides a causality relationship of the environmental and social aspects with long-term success of organizations and integrate them into the general management. In the five-perspective SBSC models of Bieker and Gminder (2001) and Figge et al. (2002a, 2002b), the social and environmental perspectives are incorporated into the system, but the cause-effect-relationship chart indicates that

financial objective still stands on the top of this pyramid, while social issues are regarded as external stakeholders. Even though more and more companies pay attentions to the social responsibility, it is an incontestable truth, that long-term financial success of shareholder's value is the final goal of for-profit enterprises all the time. Niven (2003) designs a cause-and-effect linkage for the public sector, in which customer perspective is on the top of causality, while financial perspective is set at the bottom of the chain as an input requirement of budget constraint. This linkage of measures throughout the BSC is constructed with a series of if-then statements: if the organization gets investment, then employee training can be increased. If the employee gets enough training, then production innovation will increase. If innovation increases, then support from the community will rise. However, this model overlooks the substantive functions of government, such as the economic growth and environmental protection, and considers the citizen as customer to serve but neglects the social responsibility of public sector.

Within the context of SPES, the cause-and-effect relationships among the perspectives are widely different from the traditional model rooted in the business sector. Firstly, the citizen satisfaction is reified into the concrete and three-dimensional primary objectives of government, while the integrated, balanced and triune SEE goals, those altogether build up one general concept "social welfare", will replace the sole financial success as the final goal of government. To achieve the SEE primary objectives, the internal process will be adopted as secondary objective to improve the new and innovative performance related to the SEE aspects. Finally, the organizational learning and growth play the role of performance drivers, which offers the personal, institutional, technical and financial supports to enable the internal process and primary objectives. Figure 4.6 provides an outline of cause

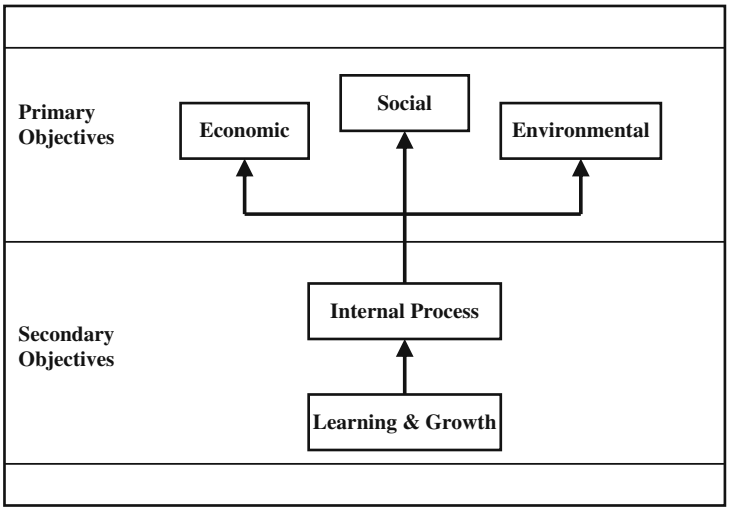

Fig. 4.6 Cause-and-Effect Relationships of SBSC

and effect linkages, which is just like a trident, the three-pronged spear carried by Poseidon. The causality begins with the organizational learning and growth, which prepare the infrastructure and capitals (human, organizational, information and financial) for the internal process in government. And then the excellent internal processes ensure the strategy to be exactly translated from planning into implementation and improvement process. Finally, the three balanced and interdependent SEE primary objectives will be achieved to meet the public needs of sustainable development.

4.4.3 Strategy Map of SBSC

In order to make the causality of BSC easy to read, understand and share with others, Kaplan and Norton (2004) designed the strategy map, "a visual representation of the cause-and-effect relationships among the components of an organization's strategy". Niven (2003) defines strategy map is "a one-page document that graphically displays your performance objectives", by gathering all information on one page to display the performance objectives, which serve as landmarks on the organization's journey toward strategy execution (Niven, 2003). It also plays a role as a communication tool for the organizations, leading to relatively easy strategic communication between executives and their employees and makes a successful implementation of the strategy. Moreover, it provides a checklist for a strategy's components and interrelationships (Kaplan & Norton, 2004) to detect the missing elements in advance and avoid the disappointing outcomes. Therefore, it is essential to develop a strategy map for the SBSC of SPES, which can not only tell you if you are on track, but also refine the performance objectives again to form a framework for designing and selecting the indicators.

As shown in Fig. 4.7, the strategy map of SBSC portrays clear cause-and-effect linkages with connecting arrows among the objectives and the critical drivers, which are identified under the sustainability objectives and five perspectives in the foregoing text. On the bottom of the strategy map is the learning and growth, including four kinds of investments in the organizational capability. The financial investment concerns the cost reduce or budget constraint, and enables the establishing of personal, institutional and technical infrastructure, which are non-financial assets for the organizational development. The four input measures promote the organizational development, which facilitates the improvement of internal process. In the internal process perspectives, three processes (planning, operation and improvement) play the role of the measures for the excellent process, which lead to the effective and efficient administration outcomes of SEE issues. Due to the uncertainty of the external environment and the effect of other elements, the causality between the administration efforts and the practical impacts is precarious, so some shadows are added at the end of arrows. Finally, the progress towards sustainable development would lead to the improvement of social welfare, and then citizen satisfaction.

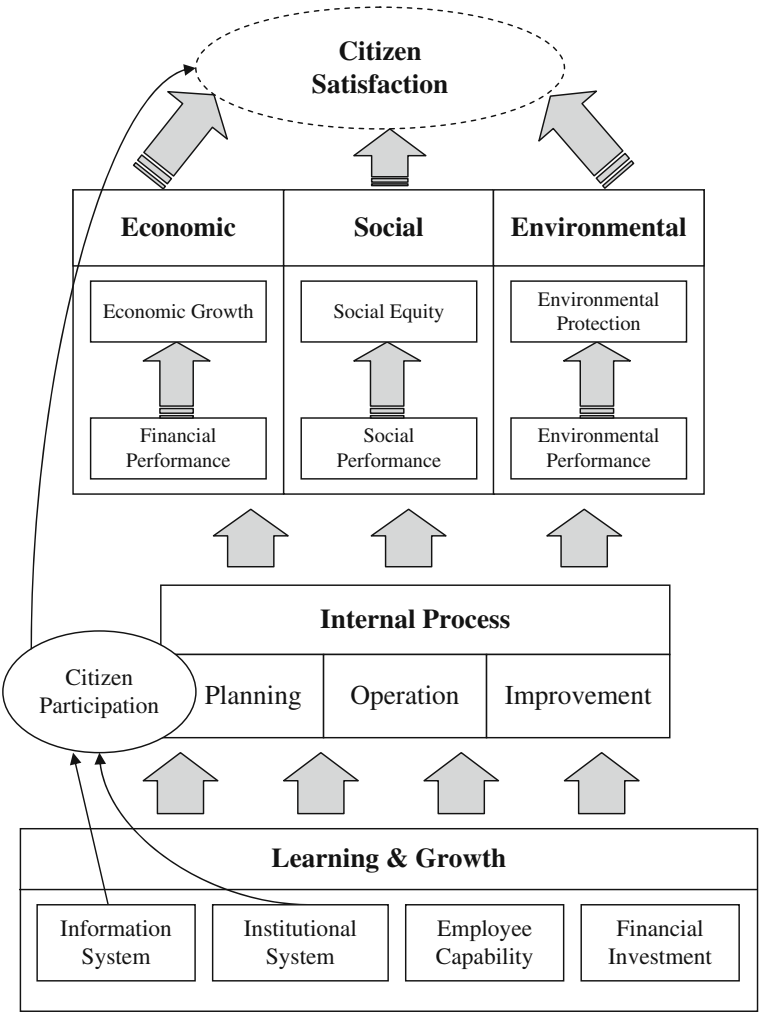

Fig. 4.7 Strategy Map of SBSC for SPES

The citizen satisfaction, presenting itself on the strategy map, is not accepted as one perspective of SBSC, but embodies an underlying mission of government, which has been reified further into the concrete and tangible three-dimensional primary objectives of government. The reason of displaying this element is just want to outline a complete map about how to translate the intangible goals into tangible objectives and activities. As shown on the map, there are still some shadows at the end of arrows from the three-dimensional objectives to the citizen satisfaction, because the causality between the progress towards sustainable development and citizen satisfaction is uncertain, too. Moreover, to ensure the achievement of the "citizen satisfaction", a special measure named "citizen participation" is appended

to the internal process. It is mainly based on the institutional and technical support in the organizations, which enables the citizen as partners to discuss and identify SEE issues those are important to them during the planning and implementation phases. This new measure is very meaningful to ensure the public service that responds to the citizens' needs and to enhance the acceptance of the public.

4.5 Designing and Selecting the Measures, Targets and Initiatives

The strategy map has turned out to be an innovation of the original BSC to develop the performance objectives (Kaplan & Norton, 2004), but the BSC also provides a set of measures, targets and initiatives used to gauge success on the objectives (Niven, 2003). As the final stage of developing the SBSC, the tangible measures and initiatives will be discussed in each perspective, which establish a five-perspective scorecard that provides a framework to develop the performance indicators for SPES.

4.5.1 Developing the Performance Measures

Niven (2003) defines the performance measures as "standards used to evaluate and communicate performance against expected results", and begins to analyze the traditional types of measures most used by pubic and non-profit organizations in practice: input, output and outcome. As the statement in Chapter 3, the three-dimensional extensions of evaluation scope result in an input-output-outcome-impact model of SPES. That means, within the context of SPES, SBSC will contain a mix of input, output, outcome and impact measures weaving through the five perspectives.

Every measure selected for a BSC should be an element of a chain of cause-and-effect relationship that communicates the meaning of the strategy to the organization (Kaplan & Norton, 1996a). Figure 4.8 provides an outline for the causality of the four types of measures. Firstly, the financial revenue is invested into the government and the agencies to support the organizational infrastructure, including personal, organizational and technical development, and all of the four measures are considered as an input. The organizational capability development will facilitate the effective and efficient production and delivery of public service throughout the internal process (output measures). Furthermore, the high-quality public administration leads to better performance of SEE issues, which measure mainly the more immediate, tangible or observable changes (outcome measure). Finally, the social equity, economic growth and environmental protection are chosen as impact measures to assess the long-term consequences of the administrative intervention, which reveal the extent to which the public policy and activities makes a difference on living condition and social welfare.

These four measures can be divided into two groups: lagging and leading measures. The outcome and impact measures reflect the primary goals of sustainability

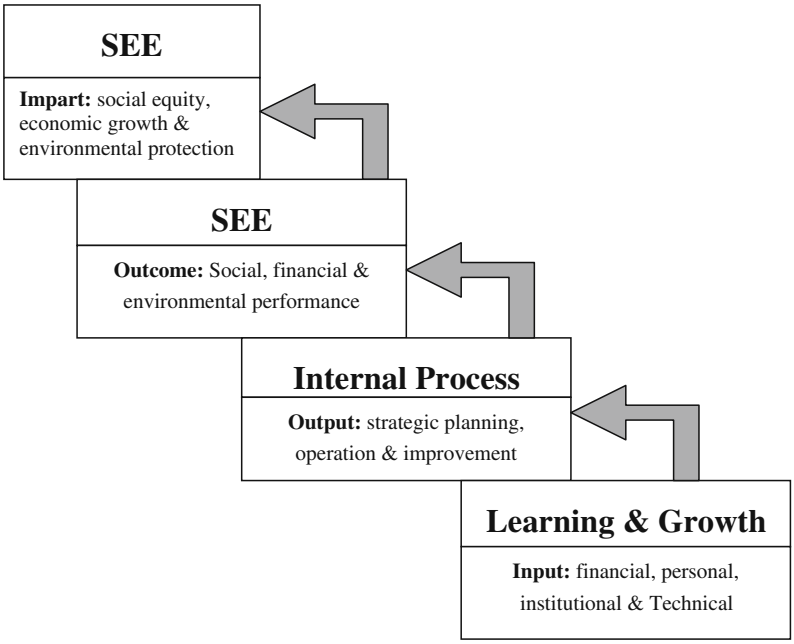

Fig. 4.8 Input-Output-Outcome-Impact Chain of SBSC. Adapted from Niven (2003)

management in government, which tend to be lagging indicators. The performance drivers (input and output measures) tend to be the leading indicators, which promote to realize the achievement of outcomes and impacts. "The balanced scorecard should contain a mix of lag and lead indicators of performance." (Niven, 2003) Without lagging measures, leading measures will loss the orientation; conversely, lagging measures without leading measures may enable the organization to achieve the short-term operational improvements, but will fail to reveal whether the operational improvement have been translated into long-term success of sustainable development and into citizen satisfaction (Kaplan & Norton, 1996a).

4.5.2 Developing the Performance Targets and Initiatives

If the measures define the standard to assess the objectives, targets should be identified to represent the "desired results of a performance measure", which will be used to compare with the actual performance results to inform the efficiency or effectiveness of organizational performance (Niven, 2003). For example, according to the GPRA 1993 in USA, each federal department will submit long-term strategic planning with annual performance targets, which will describe the short-term desired results for performance measures. In keeping with the theme of cause and effect, the achievement of performance targets will facilitate to reach the long-term objective and mission of organizations (Niven, 2003).

As the above mentioned, the performance objectives identify the orientation, performance measures give us the suggestions about how to reify the objectives into some tangible approaches and standards, and then performance targets determine the specific short-term objectives further. After these steps, there is still one step left to build up a BSC, that is, to translate the targets into the initiatives. Initiatives are the specific program, projects, or action plans in an attempt to achieve the performance targets (Niven, 2003). During setting the initiatives, which relates to both the human and financial resource allocation, it is essential to test the linkage between the initiatives and the performance objectives in light of strategy. If the initiatives don't contribute to the strategy exactly, some modulation and rectification should be made to ensure the consistency of initiative with the performance targets and objectives.

4.5.3 Finalizing the Scorecard for the SPES

According to the above statements, from the mission statement to initiatives setting, a series of objective, measures, targets and initiatives are identified, in order to build up a scorecard for SPES. Figure 4.9 gathers all the information and shows us the mechanism of the SBSC that is divided into four parts:

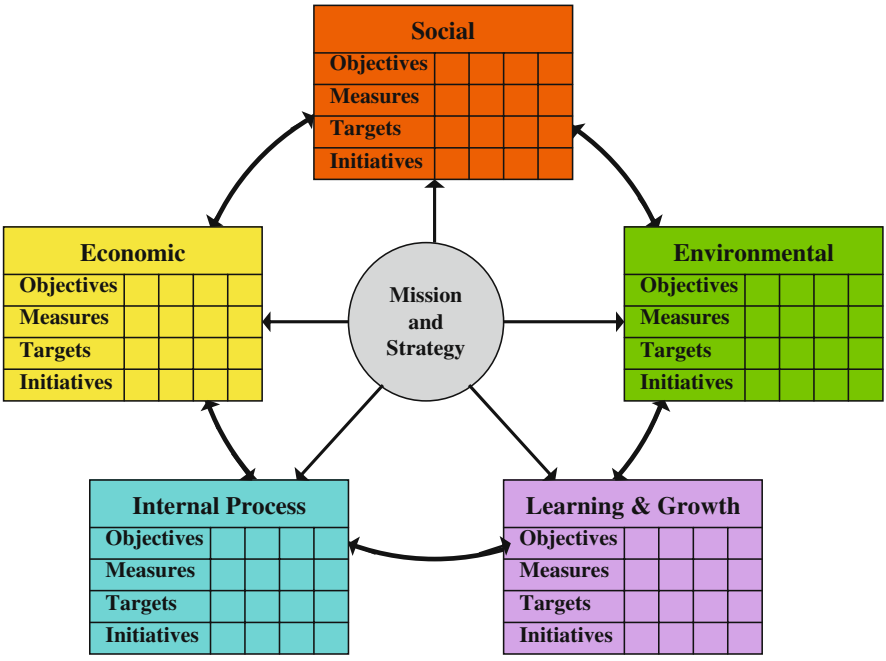

Fig. 4.9 Sustainability Balanced Scorecard. Adapted from Kaplan and Norton (1996b)

- **Radiation Process**: The mission and strategy are set at the center of the SBSC and to steer the translation of mission and strategy into explicit objectives and measures in five perspectives exactly.
- **Circularity Process**: Five perspectives linked with cause-and-effect relationships interplay to develop the objectives and measures, which will cover all of the important factors and ensure the implementation of strategy.
- **Reification Process**: To translate the strategic objectives into actions and reality, after the establishment of long-term objectives, it is essential to determine the specific measures, short-term targets and plans, aligning with the financial and human resource allocation.
- **Improvement Process**: Cooperated with an information system, following the PDCA cycle, the SBSC offers a learning system by collecting feedback information, which will keep its ability to renew and improve continuously.

This scorecard sums up all the arguments in this chapter. It is useful to better understand strategic control system of SPES and the causal and balanced linkages among all objectives and measures, initiatives and achievements. Moreover, it provides a framework to develop a new indicator system for SPES, which will be demonstrated in the next chapter.

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Chapter 5
Sustainability Performance Indicators

Abstract After reviewing the current achievements and "Strategic Gaps" of sustainable development indicators, this chapter tries to develop an indicator system to facilitate the sustainability performance evaluation in government. Based on the Sustainability Balanced Scorecard (SBSC) developed in Chapter 4 that outlines a framework for translating an organization's mission and strategy into a set of performance objectives and measures, a new indicator system named "Sustainability Performance Indicators" (SPIs) will be proposed as one consequence of this research. Finally, some barriers of the SPIs and E-government as solutions will be discussed.

Keywords Sustainability performance indicators · Sustainable development indicators · Sustainability balanced scorecard · Strategic gap · E-government

As one necessary part of a well-constructed system, ISO 14031 EPE system considers that indicators are central to the structure, providing information about different aspects of environmental performance and management at various levels within an organization (Wathey & O'reilly, 2000). In order to develop an indicator system for SPES, this chapter begins with a review of the current achievements of sustainable development indicators (SDIs), especially the contributions of UNCSD and the experiences in four countries, which proves the limitation "Strategic Gaps" (SGs) of the current performance evaluation systems from another perspective. Then, based on the Sustainability Balanced Scorecard (SBSC) developed in the previous chapter that outlines a framework for translating an organization's mission and strategy into a set of performance objectives and measures, a new indicator system named "Sustainability Performance Indicators" (SPIs) will be proposed as one consequence of this research to facilitate the sustainability performance evaluation in government. However, to establish a detailed and comprehensive indicator system is beyond the capability of this book. So, with the help of SBSC, this chapter only focuses on building up a set of framework SPIs for the SPES on the level of national governments.

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5.1 Review of Sustainable Development Indicators (SDIs)

In the public administrative field, the progressive reformers in USA were the first to use performance indicators to benchmark the efficiency of public organizations in the early years of the twentieth century (Gruening, 2001; Williams, 2002, 2003, 2004). Since the 1980s, influenced by the Financial Management Initiative (FMI) in 1982, performance indicators have become ubiquitous in the UK government (Smith, 1990; Liu, 2004). The GPRA in USA asks the departments and agencies to submit the long-term strategic planning and the annual performance objectives, which will be used as the performance indicator to evaluate the performance of public services. Over the past 10 years, indicators have gained importance and are increasingly used in planning, budgeting, objectives and priorities setting, performance monitoring, and communicating with the public (OECD, 2006b). Under the context of RBM, performance indicator, a measure at the heart of a performance evaluation system, is designed to describe how well a program is achieving its objectives, which contributes to a better public accountability by the sector, as well as ensures that policy decisions can be made based on consistent and reliable information.

5.1.1 Outline of SDIs Worldwide

When sustainable development is accepted as a national strategy, the commonly used indicators, such as the Gross National Product (GNP), do not provide adequate indications of sustainability. Therefore, the Chapter 40 of *Agenda 21* called on both government at the national level and non-governmental organizations at the international level to develop and identify indicators of sustainable development that can "provide solid bases for decision-making at all levels and contribute to a self-regulating sustainability of integrated environment and development systems" (UN, 1992; UN DESA, 2001; Monssen, 2005). So, around the world a growing number of initiatives are presently trying to develop sustainability indicators.

Because indicators can provide more and better information about social conditions, trends and impacts by simplifying complex information for easier comprehension, the important role of indicators is recognized in helping to make informed decisions concerning sustainable development at all levels. According to Spangenberg, Pfahl, and Deller (2000), such indicators are designed to accomplish these three tasks: (1) to generate a simplified but reliable description of the conditions and progress towards sustainability; (2) to help monitoring of the progress achieved, guiding data collection and providing early warning signals on the success or failure of policies adopted; (3) to communicate with the public at large in a clear and easy understood way. Moreover, Pintér, Hardi, and Bartelmus (2005) argue that SDIs have an integral role in several phases of NSDS, from the identification of strategic priorities, through the planning and implementation of specific policy interventions, monitoring progress and learning from successes and failures. Especially, SDIs have

the potential to translate the sustainable development strategy into actions by facilitating the policy and specific decision-making that take interactions between sustainability issues into account.

Many efforts have been made to develop SDIs by the international, governmental and non-governmental organizations. The OECD program on environmental indicators developed one of the first sets of indicators that helped understand the changes towards sustainable development, in order to follow a request at the 1989 G-7 Summit (Kerr, 1997; Monssen, 2005). Some of the most prominent indicators or indicator sets include the Human Development Index (HDI) of the United Nations Development Programme (UNDP), the Environmental Sustainability Index (ESI) and the pilot Environmental Performance Index (EPI) reported under the World Economic Forum (WEF), and the World-Wide Fund for Nature (WWF) "Ecological Footprint" (Pintér et al., 2005). Hass, Brunvoll, and Hoie (2002) identify two major approaches of SDIs, and range the above indicators as the first approach, developing a single and composite index, which implies selecting a number of different components and combining them into a single unit. They argue most countries effort to the second approach, developing a set of indicators or/and a smaller set of "headline" indicators, which can facilitate the communication with the general public and provide more detailed and extensive information by analyzing the changes across several dimensions of sustainable development separately. Pintér et al. (2005) argue that the development of SDIs in the past half decade shows a trend of interest in core sets of "headline indicators" (HIs), besides a continuing need for aggregate indices. Because of its attributes, such as, easier to understand and helpful to track broad progress towards selected policy goals, the HIs have been published by the UK Government, the European Environment Agency (EEA) and the Australian Bureau of Statistics, and some international agencies, even those which have developed other sets of SDIs, like the World Bank and OECD, have published headline indicators in different sectoral and sustainable development reports too.

Furthermore, the work of international organizations such as the UNCSD, OECD and Eurostat contributes significantly to the development of SDIs at the national level (Hass et al., 2002). Concerning extension of national accounts and satellite accounts, the OECD has been pilot testing an integrated system of economic and environmental accounts (SEEA). And the World Bank has made estimates of various types of assets and genuine savings as sustainability indicator for a wide range of countries. These accounting frameworks provide a strong analytical base for the design of reliable SDIs (OECD, 2000b). Since the adoption of the EU Sustainable Development Strategy in Gothenburg in 2001, the Statistical Programme Committee, chaired by Eurostat established a Task Force to develop the SDIs, which was adopted by the European Commission in February 2005. The preliminary set of SDIs consists of 155 indicators classified in 3 levels according to the objectives and measures to be monitored (Eurostat, 2005a, 2005b). Cooperated with the UN and OECD, World Bank publishes "World Development Indicators" annually, which reflects a comprehensive view of the development process. The latest being "World Development Indicators 2007" includes more than 900 indicators in over 80 tables organized in 6 sections: World View, People, Environment, Economy, States and

Markets, and Global Links (Warhurst, 2002; World Bank, 2007). Besides these indicator systems, the framework of SDIs proposed by United Nations Commission on Sustainable Development (UNCSD) is one wide-accepted model, which offers the guidance for the countries to develop sustainable development as a national strategy. Due to its significance and successful experience, the SDIs of UNCSD is discussed in detail in the following sections.

5.1.2 SDIs of UNCSD

According to the mandate of *Agenda 21*, the UNCSD initiated the work programs on SDIs with the main purpose of defining them, elucidating their methodologies and providing training and other capacity building activities, in order to make SDIs accessible to decision-makers at the national level (UN DESA, 2001). The SDIs proposed by UNCSD also serve as the reference for countries to develop national indicators of sustainable development (UNDSD, 2007), by providing a consistent sustainability measure for international comparisons with the potential for individual national flexibility.

5.1.2.1 Three Editions of UNCSD's SDIs

Following the recommendations of the Chapter 40 of *Agenda 21*, in its third session in 1995, the UNCSD initiated a program for developing and implementing SDIs as a tool for assessing the progress towards sustainability and communicating the achievements (Spangenberg et al., 2000; Segnestam, 2002). The first edition published in 1996 includes 134 indicators, following thematically the chapters of *Agenda 21*, and structured into four categories – social, economic, environmental and institutional. As part of implementing *Agenda 21* into national policies, between 1996 and 1999, the UNCSD indicators were tested for their usefulness and applicability by 22 voluntary pilot countries from all regions of the world (Spangenberg et al., 2000; UN DESA, 2001).

As a result of this iterative process, the report *Indicators of Sustainable Development: Guidelines and Methodologies* published in 2001 finalized the second presentation of the proposed framework and the core set of indicators that will be made to assist member countries to measure the progress toward sustainable development. It provides a new framework of 15 themes and 38 sub-themes to guide national indicator development. In the second edition, the number of indicators in the core set has been considerably reduced to 58 indicators compared to the original 134 presented by the 1996 publication. The second edition with theme framework and the core set has overcome many of the difficulties experienced with the 1996 edition, and retained a better balance of the sustainable development themes common to national policy development, implementation, and assessment needs (UN DESA, 2001).

Most recently, the report of the 13th session of the UNCSD in 2005 also pointed out the need for continuous work on SDIs on the national level (Pintér et al., 2005).

Therefore, the third, revised UNCSD indicator set, based on the previous two editions, was released in 2006 by a group of indicator experts from developing and developed countries and international organizations. It consists of a set of 50 core indicators, as part of a larger set of 98 indicators of sustainable development, which allows for a more comprehensive and diverse assessment of sustainable development by countries. The core indicators cover issues that are relevant to sustainable development in most countries. These indicators and their detailed methodology sheets will be available as a reference for all countries to develop national indicators of sustainable development (UNDSD, 2007).

5.1.2.2 Framework of UNCSD's SDIs

Sustainable development embraces many issues and dimensions, so that a conceptual framework is required to organize the selection and development of indicators (Gallopín, 1997). A framework provides the means to structure sets of indicators in a manner that facilitates their interpretation, and ensures that all of those aspects have been taken into account (Segnestam, 2002). While many frameworks were developed in the 1990s, only a few of them gained international acceptance. Segnestam (2002) argues about three commonly used frameworks: (1) project-based framework (or the Input-Output-Outcome-Impact framework), which is widely used by World Bank in the monitoring of the effectiveness of projects to improve the state of the environment; (2) Pressure-State-Response (PSR) framework, which is developed by the OECD for national, regional and international level analyses; (3) theme and subtheme framework to support policy makers in their decision making at a national level. Pintér et al. (2005) point out that the main differences among the frameworks are the way in which they conceptualize the main dimensions of sustainable development, the inter-linkages among these dimensions, the way they group the issues to be measured, and the concepts by which they justify the selection of indicators.

The first edition of UNCSD indicators in 1996 was structured along the lines of *Agenda 21* chapter by chapter, and the classification of indicators in each chapter builds upon the framework PSR (Spangenberg et al., 2000), which was developed for the environmental statistics in Canada and later adopted by OECD for use in environmental indicator reports, starting in 1991 (Pintér et al., 2005). Because OECD indicators had exclusively focused on the environment, the PSR is modified into a new model named "driving force-state-response" (DSR) framework to take into account all three dimensions of sustainability (Mortensen, 1997; Spangenberg et al., 2000). In the DSR framework, the term "driving force" indicates the impacts on sustainable development either positive or negative. State indicators provide the information on the condition of sustainable development, while response indicators represent societal actions aimed at moving towards sustainable development (Mortensen, 1997; UN DESA, 2001). As the variation of the PSR framework, DSR is also based on a concept of causality among the three categories: the "driving force" indicators provide information about the causes or pressure of social, economic or environmental problems and changes, which alter the state or condition of the environment or social welfare. Then some actions/measures as "responds" are

taken by social institutions, organizations or individuals to prevent or mitigate undesirable changes (OECD, 1993; Hardi & Pintér, 1995; Monssen, 2005). Therefore, the first edition has shown us a matrix that incorporates three types of indicators along DSR horizontally and the four dimensions of sustainable development vertically, that is, the environmental, economic, social and institutional (Pintér et al., 2005; Monssen, 2005). Highlighting these cause-and-effect relationships, the DSR model thus provides a systematic means of selecting and organizing indicators in a way useful for decision-makers and performance evaluation, which has the advantage of being one of the easiest frameworks to understand and use (OECD, 2003).

Although generally viewed as the best conceptual framework for indicators and state of the environment reporting, the DSR or PSR models have some limitations, such as, they do not work if evidence for causal linkages is missing, sometimes it is ambiguous to distinguish whether the issue represents a driving force or a state, and there are multiple pressures for most states, and multiple states arising from most pressures (Pintér et al., 2005). The testing results reported to UNCSD in 1999 showed that the DSR framework turned out to be not appropriate for the social, economic, and institutional dimensions of sustainable development, although suitable in an environmental context. In addition, due to the difficulty of selecting appropriate indicators and redundancy of indicators working list, it was rarely used by testing countries and therefore eventually abandoned (Segnestam, 2002; UN DESA, 2001).

Another reason of the abandonment is because the rationale for the theme framework is to better serve policy decision-making needs. With the background of the national testing experience and the overall orientation to decision-making needs, the Expert Group on SDIs recommended that the indicator framework should be refocused on emphasizing policy issues or main themes related to sustainable development (UN DESA, 2001). As a result, a framework of 15 themes and 38 sub-themes has been developed to guide the national indicator development (see Appendix B). The indicators clearly reflected common priorities among the national and international issues, and largely eliminated the problems associated with duplication, lack of relevance and meaningfulness, and absence of tested and widely accepted methodologies (UN DESA, 2001). The 3rd edition of SDIs continues to be placed in a framework of themes and sub-themes, but is slightly modified from the previous edition, for example it contains 15 themes and is no longer explicitly categorized into four pillars of sustainable development (UNDSD, 2007).

Even though the framework has evolved from a DSR approach to one focusing on themes and sub-themes of sustainable development, and direct reference to the DSR framework has been discontinued, it is still possible to categorize the individual indicators as driving force, state, or response measures (UN DESA, 2001). In the annex 2 of the report *Indicators of Sustainable Development: Guidelines and Methodologies* (UN DESA, 2001), some core indicators are grouped into three categories according to the DSR framework, which makes the indicators under different themes or sub-themes linked with a causal chain of DSR. This integration of theme framework and DSR framework will facilitate the selection of SDIs under a logic frame.

5.1.2.3 SDIs as Performance Evaluation Tool

According to the Chapter 40 of *Agenda 21*, the crucial role of SDIs is to provide guidance for decision-making in a variety of ways. Hardi and Pintér (1995) point out that SDIs might be applied for policy development and policy control, and elaborate on four of their functions that serve both of these processes: analytical (policy) assessments, communication, warning & mobilization, and coordination function. Kuhndt, Geibler, and Eckermann (2002) argue that SDIs can provide useful information at three levels: at the strategic level, they provide a detailed and balanced information basis for decision-making; at the operational level, they support management to evaluate and continuously improve its performance and progress in order to realize cost-saving potentials and to comply with the regulatory framework; at the tactical level, they improve products and services, as well as at the strategic level to benchmark the company or sector against competitors or to give guidance on investment decisions. Thus, the SDIs still can be used as one tool of control system other than as the decision-aiding tool. Pintér et al. (2005) argue that the development and implementation of SDIs appear to follow some new trends, directly or indirectly influenced by several other global trends that we have seen unfold in the last decade. Such as, the Millennium Development Goals (MDGs) agreed on at the UN Millennium Summit that involving time-bound targets and requiring systematic monitoring of progress at the global level lead to the emergence of goal-oriented indicators and make better use of indicators in performance measurement (Pintér et al., 2005).

As stated in Chapter 3, the governmental evaluation system in the international perspective came into performance evaluation phase since the 1990s. Within the context of RBM, most of the evaluation approaches assess the progress in achieving strategic goals and objectives by the comparison between actual and expected results. Due to the acceptance of sustainable development as national strategies, the SDIs, as the measurements to demonstrate the degree to which the particular agency provides timely, quality service to the public, began to be used to measure the performance of organizations within and without governments (Pintér et al., 2005). For example, in Canada, the sectoral SDIs have been integrated with the core administrative control system in government virtually. This trend raises the important challenges in both NSDS process and performance evaluation system, and will help improve accountability relating to the specific sustainability initiatives in government and its agencies in line with the success of an entire NSDS.

5.1.3 National Level SDIs and Sustainability Performance Evaluation

The work program on SDIs by UNCSD (implementing, testing SDIs and providing feedback) is helping countries to make practical progress towards establishing their own national indicator sets (Hass et al., 2002). By contraries, the significant work taken in several countries and the remarkably successful results reinforced

the development of indicators mandated by the Chapter 40 of *Agenda 21* (Moldan, 1997). Due to a broad spectrum of national conditions relating to geography, policy, economy and culture, the development and application of indicators in each country show a rich variety of approaches, philosophies and research results from diverse parts of the world, and finally represent a specific methodological contribution to the development of indicators in general. By accepting the revised UNCSD themes as a starting point, most OECD countries have already, or are in the process of developing SDIs (Hass et al., 2002). This section presents a number of practical applications of SDIs in four countries, where the theoretical framework of SDIs proposed by UNCSD are used and modified for the decision-making and performance evaluation, according to the unique conditions and needs of that particular country. The selected examples do not provide an exhaustive review of sustainable development governance in the world, but rather highlight current trends as well as promising developments that could help achieve sustainable development.

5.1.3.1 SDIs and Sustainability Performance Evaluation in Canada

Canada, as one of the pioneer countries, started the national program on indicators in 1989 and focused on the national set or series of environmental indicators, which were selected loosely following a "stress-condition-societal response" model within each issue (Kerr, 1997). In order to integrate sustainable development into the way government defines its business and decision-making, Canada government released *A Guide to Green Government* in 1995, which requires all federal departments and agencies to submit a sectoral strategy that incorporates economic, social and environmental dimensions of sustainable development as well as the organization's action plans for meeting these commitments to Parliament every 3 years (Government of Canada, 1995). Various departments hence publish and regularly use the indicators to measure the state of the environment or environmental stressors at both the national and regional scales. In the federal Department of Environment's 1996 *Performance Report to Parliament*, indicators were introduced in a comprehensive way for the first time (Kerr, 1997). Therefore, in Canada, a considerable amount of indicators are ongoing in specific sectors of the government in line with the sectoral strategy. Even a small set of national indicators "Environment and Sustainable Development Indicators" (ESDI) to track national progress in several key areas began to develop by the National Round Table on the Environment and the Economy (NRTEE) (NRTEE, 2003), but until today, there is no national sustainable development strategy and comprehensive national SDIs developed. With a lack of consistency in approaches, as well as the absence of national-level indicators, it becomes difficult to provide any comprehensive information with respect to the overall environmental impacts of government interventions (Stratos Inc., 2004a).

The need for SDIs became more real, when the concept of sustainable development has been integrated into federal legislation and into amendments to the *Auditor General Act* in 1995, which established a legal basis to require all federal departments to submit individual Sustainable Development Strategies to Parliament every

3 years.[21] Canada's Commissioner of the Environment and Sustainable Development (CESD), created within the Office of the Auditor General (OAG) in 1995 (CESD, 2006), is given overall responsibility to audit the government's overall performance on sustainable development as well as the commitments laid out in departmental strategies submitted to Parliament on overall progress towards the stated objectives (Swanson, Pintér, Bregha, Volkery, & Jacob, 2004). The findings from the Commissioner's report have often led to the direct responses from departments and agencies, and the recommendations, which provided the guidance to departments with respect to their strategy and to the overall approach towards sustainable development at the departmental level, have been influential in determining the content of each round of sustainable development strategies with the purpose of the coordination inside the NSDS process (Stratos Inc., 2004a; Swanson et al., 2004). Therefore, the SDIs, indicating the commitments to actions and targets to achieve the sustainable development goals in the sectoral strategy, are used as the means for measuring the departments' performance on the extent to which departments are implementing their strategies as well as progress made towards sustainable development. The application of the SDIs in performance evaluation system in Canada government is a real innovation that provides the successful experiences of sustainability performance evaluation in government.

5.1.3.2 SDIs and Sustainability Performance Evaluation in the UK

Following the commitment made at the Earth Summit in 1992 in Rio de Janeiro, the government of the United Kingdom (UK) published its *Strategy for Sustainable Development* in 1994. To fulfill the commitment outlined in the UK Strategy, in 1996, a comprehensive publication with about 21 indicator "families" was published, and in each family the "pressure-state-response" model was adapted to identify the key issues and objectives. The UK has also volunteered to test a selection of indicators drawn up by the UNCSD to help refine the UK indicators (Morrey, 1997). As one of the first countries to establish a sustainable development strategy and a set of indicators to monitor progress, the UK Government updates and improves this strategy and SDIs regularly. In 1999, the government published *A better quality of life: a strategy for sustainable development in the UK* and *Quality of life counts*, in which a new set of 15 Headline Indicators (see Appendix C) and a wider set of core indicators were put at the heart of the 1999 Strategy (DEFRA, 1999a, 1999b, 2004). And then an annual report *Achieving a better quality of life* produced by the UK Government (coordinated by DEFRA[22]) reviews the progress made towards the objectives and targets included in 1999 strategy, and provides performance information against each set of indicators (Stratos Inc., 2004b). Building on the 1999 strategy, the UK Government strategy for sustainable development

[21] See the homepage of SDinfo at http://www.sdinfo.gc.ca/s1_e.cfm.

[22] DEFRA is the abbreviation of Great Britain Department for Environment, Food and Rural Affairs.

published in 2005 has five basic principles and four agreed priorities, namely sustainable consumption and production, climate change, natural resources protection and sustainable communities (DEFRA, 2005). To support this new UK Government Sustainable Development Strategy, there is now a suite of 68 national SDIs including 20 UK Framework Indicators (see Appendix D), which are shared by the UK Government and the devolved administrations in Scotland, Wales and Northern Ireland (DEFRA, 2006, 2007).

Besides the annual reporting relating to the SDIs, there exists a Parliamentary Environmental Audit Committee (EAC) in the UK, which provides a similar function as Canada's CESD, with the mandate to review the impacts of policies and actions on sustainable development across all departments, and to audit their performance against such targets set for them by Ministers.[23] Its annual report provides an overview of the government performance with respect to specific themes and some recommendations that require the government to respond within two months, setting out those recommendations as accepted or rejected with explanatory notes (Swanson et al., 2004). Furthermore, the Sustainable Development Commission, as an independent advisory body on sustainable development, has been assigned a reinforced "watchdog" role beginning in 2006. It will monitor the implementation of the UK strategy across all sectors and report regularly to the Prime Minister on strengths and weaknesses (Stratos Inc., 2004b; Swanson et al., 2004; OECD, 2006b). Another annual report *Sustainable Development in Government*[24] supplements *Achieving a better quality of life* and focuses in more detail on actions within the UK government, reporting on the progress made by departments on integrating sustainable development into estate management and policy making (DEFRA, 2002). Therefore, centering the SDIs in the national strategy for sustainable development, the UK government established a systematic performance evaluation approach to monitor the sustainability performance in government.

5.1.3.3 SDIs and Sustainability Performance Evaluation in Germany

With its high population density and environmentally detrimental heavy industry, Germany is a country with a long tradition in air and water pollution control, with the first *Environment Programme* being established in 1971. However, its process of implementing the more recent concept of sustainable development started very slowly, indeed Germany seems to be one of the last OECD countries to introduce a national strategy for sustainable development (Jänicke, Jörgens, Jörgensen, & Nordbeck, 2001; Eurostat, 2004). Until 1998, a proposal named *Sustainable Development in Germany* was published by the Federal Environment Agency,[25] in which

[23] See the homepage of UK Parliament, "Welcome to the Environmental Audit Committee", from http://www.parliament.uk/parliamentary_committees/environmental_audit_committee/eac_remit.cfm.

[24] It is the successor of "Greening Government Annual Report" to reflect the full range of policy and operational issues for which ENV(G) is responsible.

[25] In German: Umweltbundesamt, or UBA as abbreviation.

a set of sustainability indicators for Germany had been selected and used according to the PSR framework and related to the energy use, mobility, food production, material flows and consumption pattern (UBA, 1998). Due to the coalition of Social-Democrats and Greens after the 1998 election, the 1998 strategy was anchored and replaced by the *Prospects for Germany: Our Strategy for Sustainable Development* in 2002. The Strategy is a comprehensive and multi-dimensional approach, including the long-term objectives (part I), a set of 21 key indicators (part II) and seven priority areas for action (part III). Even though the strategy does not follow the three pillars approach, the indicators cover the whole spectrum of economic, ecologic and social policies (German Federal Government, 2002; FFU, 2004a). According to the Hass et al. (2002), Germany presents its SDIs through a two-spheres (or egg) model that has two concentric spheres: one "inner oval" representing the human sphere including human activities such as social affairs, politics, culture and economy; and one "outer oval" representing the ecological sphere. To facilitate the development of indicators, a new structure "needs-activities-pressure-state-impact-response" (NAPSIR) has been introduced also (Hass et al., 2002).

A transparent and regular monitoring and performance evaluation system is a significant part of any national sustainability strategy. In order to gain a comprehensive picture, with its 21 key indicators for sustainable development (see Appendix E), a progress report on the national sustainable development strategy is to be delivered by the Federal Government every 2 years, which should describe the progress made against the SDIs and highlight the need for action to implement the strategies objectives (FFU, 2004a; Swanson et al., 2004). In order to obtain the NSDS-process on the right track, the government also established two new organizations in 2001: the Secretary of State Committee for Sustainable Development (the so-called "Green Cabinet") and the German Council of Sustainable Development (Abbreviation in German: RNE) (FFU, 2004a). The responsibility of the "Green Cabinet", headed by Federal Chancellors Office, is to prepare the Strategy in co-operation with the RNE and other societal groups to coordinate the process of implementation. That is, officially, the Green Cabinet is in charge of monitoring and reporting, but the reporting depends upon the contributions of the single departments (FFU, 2004a). In addition, the RNE is set up as an independent, pluralistic advisory body with the responsibilities including the development of contributions for the implementation of the NSDS, the designation of specific areas of actions and projects, and raising public awareness of sustainable development as an important issue (RNE, 2006). Even though the mission of the RNE does not allow for independent and effective monitoring of the Sustainability Strategy, it fulfills the function as external agency in charge of partly monitoring the process (FFU, 2004a). In 2004, Germany established a Parliamentary Committee for Sustainable Development, which plays a crucial role on the side of the legislative in practice and gives recommendations to the federal government concerning strategy implementation (FFU, 2004a; OECD, 2006b). In conclusion, based on the 21 key SDIs, the progress report delivered by the German government plays an important role as a monitoring system to inform the public about the strategy's performance, with the cooperation of some responsible organizations. Just like the comment in the final report to the Statistical Office

of the European Communities (Eurostat) about the framework of the SDIs project, "Germany is leading efforts to present SDI-based assessments to the general public in a clear, interesting and informative format" (Eurostat, 2004).

5.1.3.4 SDIs and Sustainability Performance Evaluation in China

As early as 1983, China put forth the principle of development planning, which adopted the Population Control and Environmental Protection as the basic national strategies. Since 1992, not long after the adoption of *Agenda 21*, the State Planning Commission and the State Science and Technology Commission cooperated with 57 departments and organizations began to draft out the *China's Agenda 21*, which was completed in 1993 and approved by the State Council in 1994. Furthermore, sustainable development was clearly regarded as an important policy and integrated into *China's 11th Five-Year Plan* in 1996, which is an important strategic measure to promote the implementation of the sustainable development strategy in a practical way (Guo & Gao, 1997; Government of China, 1997). Because China is still a developing country, the national strategy emphasizes the economic growth to improve the living standard and social welfare (Guo & Gao, 1997; FFU, 2004b). However, the concept of "Harmonious Society", published as the resolution of the Sixth Plenary Session of the 16th Central Committee of the Communist Party of China in 2005, advocates a new economic model in which growth is guided by resource conservation rather than by continued expansion of resource use, which promotes more balanced patterns of development (OECD, 2006b; CCPC, 2005). The goal of building a socialist harmonious society by 2020, such as further improving the socialist democratic and legal system and narrowing the gaps between urban and rural development and between different regions, is reflected in the policy guidelines delineated in *China's 11th Five-Year Plan* (Government of China, 2005, 2006, 2007). That declares the emphasis of national strategy is shifting from single-minded pursuit of GDP growth to the comprehensive, balanced and sustainable development integrating together the social, economic and environmental issues.

In order to transform *China's Agenda 21* to a practicable program, *Priority Program for China's Agenda 21* (Government of China, 1994) was published first in 1994, in which a project was launched to set up the indictors, in order to give the government and the public a clear understanding of the actual situation regarding the sustainable development in terms of nationwide economy, society, resources and environment. The indicators were also expected to serve as a basis for the development of comprehensive regulatory mechanisms and the monitoring system that will strengthen the effectiveness of China's movement toward sustainable development (FFU, 2004b). Moreover, the Administrative Center for China's Agenda 21 (ACCA21), established to facilitate the implementation of *China's Agenda 21* and sustainable development in China, drafts regularly a national sustainable development report and related action guidelines, which are the basic framework for implementing and monitoring sustainable development at national level (Guo & Gao, 1997, Swanson et al., 2004; FFU, 2004b). The "National Report on Sustainable Development", presented to the 19th UN Special Session in 1997 and for the World

Summit on Sustainable Development (WSSD) held in Johannesburg in 2002, has been produced in 1997 and 2002 to review and summarize the progress made in implementing sustainable development strategy from 1992 to 2001 (Government of China, 1997, 2002).

However, the monitoring and evaluation system of NSDS in China haven't been fully installed yet. Firstly, a comprehensive indicator system to monitor sustainable development at national level is not in place. Ongoing work in China is taking place at national as well as provincial and local levels, facing the challenges of technical requirements and data availability (FFU, 2004b). Moreover, ACCA21 as the cross-sectoral coordinator hasn't enough authority to monitor the departmental sustainability performance, while the National Audit Office of China (CNAO) still focuses its environmental audit on financial performance and regulatory compliance, including financial audit of authorities in charge of environmental protection, audit of funds from the public debts used for environmental protection projects, and audit of pollutant emission charges (Liu, Wang, & Chen, 2002; Zhang, 2007).

5.1.3.5 Comparison Among the Four Countries

In the aforementioned four countries, sustainable development was adopted as national strategy or sectoral strategy in government, and translated into concrete goals and actions. Using the UNCSD framework as a starting point, each country has already, or is in the process of developing their own SDIs according to the social environment in their countries. Furthermore, in order to monitor the progress toward sustainable development and governmental performance relating to the NSDS, each countries implements the SDIs as performance evaluation tools and report to the public. The innovation in Canada is a pioneer attempt to integrate the sustainable development performance into the performance evaluation system in government, where legal mandate was provided under the *Auditor General Act* in 1995, which licensed the CESD to audit the government's overall performance on sustainable development against the commitments included in departmental strategies, and report to Parliament on overall progress towards the stated objectives. In the UK, information on government performance is also provided in one annual report, which reviews the impacts of policies and actions on sustainable development relating to the HIs, while National Audit Office of UK still focuses on helping the nation spend wisely by promoting the highest standards in financial management reporting.[26] Moreover, based on the 21 key indicators of the strategy, the progress report delivered every 2 years by the German government also provides a SDI-based monitoring system for nearly all areas of governmental policies and priority areas for action. However, the Bundesrechnungshof gives more attention to the account and performance, regularity and compliance of financial management during auditing the environment and nature resource issues related to a number of major government departments (Bundesrechnungshof, 2005).

[26] See the mission and vision of UK National Audit Office, from the website www.nao.org.uk.

Comparing with the three developed countries, China is facing the dual challenges of the economic growth and the implementation of NSDS. Firstly, from the national strategy perspective, the emphasis just began to shift from the economic development to the "Harmonious Society" in recent years, in which the social equity and socialist democracy are placed on the agenda. Secondly, there is no powerful mechanism to integrate sustainable development into the departmental and local plans and annual performance objectives indeed, even though the importance of this strategy and integration into plans is stressed. Moreover, there is no comprehensive indicator system to monitor and measure sustainable development at national level. Finally, the existing performance evaluation system on sustainable development and environmental performance is still fragmented and incomplete. Therefore, the implementation of NSDS, SDIs and SPES in China is less developed than other countries and still has a long way to go. The comparison among the four countries, focusing on SDIs and SPES, are summarized in Table 5.1.

Figure 5.1 illustrates the positions of the four countries in a portfolio matrix, which indicates the progress of SDIs and SPES plotted on an x/y graph. The horizontal axis represents the performance of SDIs and the scale reveals if one well-structured SDIs is in place or not, for example, there is no SDIs in the countries when the value is less than 1. The vertical axis represents the status of SPES and

Table 5.1 Comparison Among the Four Countries

	NSDS	SDIs	SPES
Canada	No NSDS, sectoral sustainable development strategies (SDSs) submitted every 3 years	No national-level indicators, sectoral SDIs published by various departments	CESD reviews the departmental performance implementing their SDSs, as well as progress made towards SDS commitments
UK	Regularly updated NSDS (1994, 1999, 2005)	68 national SDIs including 20 framework indicators	Based on the SDIs, systematic performance evaluation system
Germany	Comprehensive and Multi-dimension sustainable development strategy (2002)	21 key indicators for nearly all areas of governmental policies and priority areas	SDI-based but no external independent monitoring system
China	Cross-sectoral NSDS with a strong focus on economy growth	No comprehensive indicator system	Environmental auditing conducted by CNAO but limited to selected areas

Note: Some information is from the report "National Strategies for Sustainable Development: Challenges, Approaches and Innovations in Strategic and Co-ordinated Action" by Swanson et al. (2004) and its Case Study report.

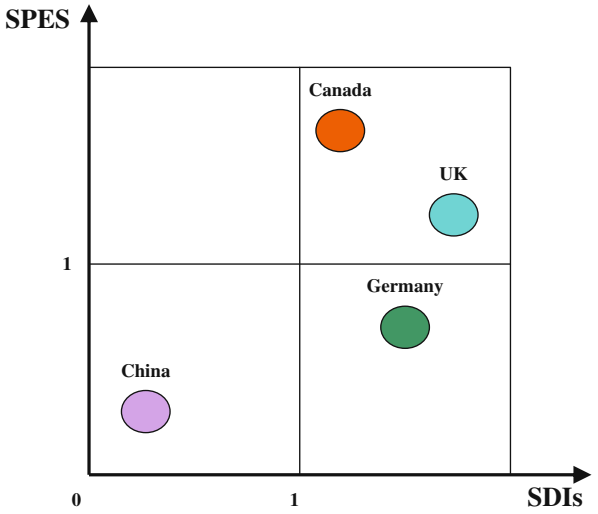

Fig. 5.1 SDIs-SPES Portfolio
Note: This figure gets inspiration from "Fig. 1. Priority Policy Tools" of "Governance for Sustainable Development: Five OECD Case Studies" (OECD, 2002), in which three tools (Greening of Taxation, Budget and accounting/Evaluation and accountability mechanisms/Innovative Regulatory Tools) of five countries are displayed in five triangles that show the relative performance of each policy tools for policy integration

the scale reveals if an attempt of SPES is in existence or not, such as Canada has a relative complete system but China hasn't. The graph allows us to look into the situation and future orientation of the SPES and SDIs not only for China but also for other countries that adopted sustainable development as the national strategy. On the other hand, the relativity between SPIs and SPES can be seen from Fig. 5.1, that is, a comprehensive SDIs or indicator system is the requirement and facilitation for the SPES, which is helpful to build up an indicator-based SPES.

5.1.4 "Strategic Gaps" of SDIs as Performance Evaluation Tool

After reviewing the SDIs of UNCSD and SDIs developed in the four countries, it is observed that using SDIs as a performance evaluation tool in government is accepted increasingly, in order to track progress toward implementation of the initiatives directed at achieving the sustainable development strategy objectives. However, there are still some barriers during switching the role of SDIs from the decision-aiding tool to performance evaluation tool for the sustainability management in government and its agencies. The first one is their feasibility and acceptability in SPES.

Originally, SDIs as performance evaluation tool are designed for the monitoring and evaluation (M&E), which is one part of the cyclical process of continuous improvement towards sustainable development. As the comparison between the

M&E and the SPES in Chapter 3, the purpose of M&E is to facilitate the decision-making regarding the sustainability performance, whereas SPES emphasizes on evaluating and improving the accountability and performance of government and its agency. Moreover, when the evaluation scope of SPES extends from operational to strategic planning process, the results and determinants should be brought into evaluation scope including inputs, outputs, outcomes and impacts. However, the M&E only involve monitoring and evaluation of processes (progress on the implementation of activities and how effectively this is done) and outcomes (progress toward the substantive affects that policy initiatives are designed to achieve) (Swanson et al., 2004). Therefore, M&E haven't brought the organizational capability, strategic planning and citizen participatory process into the scope, that is, they still have the limitation named "Strategic Gaps" (SGs) of the traditional performance evaluation.

Within this context, SDIs, mainly focused on the outcomes regarding the three pillars of sustainable development principles, began to integrate the institutions relating to the NSDS into the indicator system, for example, the SDIs of UNCSD with the institutional indicators. This innovation indicates the trend that the performance indicators began to extend to the determinants or performance drivers. However, because of the lack of more explicit conceptual information, any anticipation of the institutional understanding has to be based on the set of indicators suggested by UNCSD, which covers only macro institutional mechanisms such as "Institutional Framework" and "Institutional Capacity" (see Appendix B), but does not exploit the full range of institutions (Spangenberg et al., 2000). When the SDIs are used to measure the micro sustainability performance of government and its agencies, obviously, they fall short of the requirement of SPES. SDIs, such as, the 15 HIs in the UK (see Appendix C) and 21 key indicators in Germany (see Appendix E), overemphasize on the results but neglect the performance drivers, especially the employee capability and citizen participation. Moreover, in practice, only a few countries have developed an integrated set of indicators to allow the analysis of the inherent trade-offs and inter-linkages among the three dimensions of sustainable development (Swanson et al., 2004). Therefore, the SDIs have inherited the limitation of three SGs from the current performance evaluation system. In order to fill these gaps, a more comprehensive indicator system need to be developed, which should move beyond the indicators chosen by the UNCSD, and support the government to evaluate the sustainability performance and strengthen the public accountability.

5.2 Sustainability Performance Indicators for SPES

After reviewing the SDIs worldwide, the limitations of current SDIs as performance evaluation tool are evident. To fulfill the SGs of traditional performance evaluation system, a new indicator system named "Sustainability Performance Indicators" will be proposed in this section, based on the SBSC introduced in Chapter 4.

5.2.1 Role of Sustainability Performance Indicators (SPIs) in SPES

Sustainability Performance Indicators (SPIs) should be a set of indicators designed for the SPES to measure and control the sustainability performance of government and its agencies. Thus, the ultimate purpose of SPIs is to improve the public accountability and performance, while SDIs has made great efforts to support decision-making at a national and local level. In order to remove the SGs of current performance evaluation system and SDIs, the content of SPIs must go beyond the components of SDIs, extending from the results (progress) toward the strategy sustainable development to the determinants of long-term success, which answers for the extended evaluation scope of SPES.

As one new model of performance indicators, SPIs play the role of "Ruler" to measure how well an organization is achieving its preset objectives, which cover not only the primary objectives but also the secondary objectives in line with the NSDS. The findings of SPES will be used as "Alarm", which can provide an early warning signal in time to prevent economic, social and environmental damages. For the decision-maker, SPIs is still the "Compass", which can help them to calibrate the orientation towards sustainable development. In addition, when the governmental management initiative has resulted in an increased flow of management information (Smith, 1990), SPIs can translate the overfull information into the comprehensive and compact index in an easy way, just like the "barometer" to facilitate the communication with the public.

5.2.2 Framework of SPIs

Developing a set of indicators is a complex process consisting of many components, so that it is essential to build up a framework as the first step in working with indicators. A framework formulates the underlying concept of the mission and strategy, which helps the indicators focus and clarify what should be measured and what is expected from the measurement. Moreover, the framework provides the means to structure sets of indicators in a manner that facilitates their selection and development, and ensure that all of those aspects have been taken into account. It has also a key role in aiding the understanding of how different issues are interrelated, and helps to make the indicators useful and relevant for policy priorities (OECD, 2000b; Kuhndt et al., 2002; Segnestam, 2002; Pintér et al., 2005).

Different types of frameworks have been used to model sustainability. As mentioned in the above sections, the UNCSD accepts the Themes and Sub-themes framework integrated with DRS framework to organize and relate the indicators. However, this framework still has a number of inherent weaknesses. Spangenberg et al. (2000) argue that the DRS framework is that of "end-of-pipe policies": first wait for the damage to happen as driving pressures, then describe the condition or state, and finally begin to take measures. This logic frame makes the preventive and

proactive policy guidance remains weak, and can't meet the requirement of strategic control system. In addition, the concept of institutional indicators is ambiguous and falls short of the requirement of NSDS, touching little upon the input and process measures such as organizational capability and citizen participation. Learning from the SDIs of UNCSD, considering the specific role of SPIs in SPES, the SBSC, the result of the analysis in the foregoing text, will serves as a comprehensive conceptual framework of SPIs to determine the basic elements of SPES and their relationships.

5.2.2.1 SBSC Framework of SPIs

The BSC provides a conceptual framework for translating an organization's strategy into a set of performance indicators. Even Onsman (2003) states the BSC is just a collection of indicators, which are grouped into some key areas of activity and connected logically. In Chapter 4, the SBSC of SPES provides a scorecard which organizes the multiple performance measures under the five perspectives in two groups: (1) three of them are relating to three-dimensional primary objectives of sustainable development (SEE objectives), which replace traditional financial measures and customer satisfaction as the primary objective; (2) another two perspectives concerns the secondary objectives that enable the three primary objectives. Each perspective contains four components: objectives, measures, targets and initiatives, which form a causal chain reflecting the paths in which the strategy is translated into specific actions. All of the ideas will be brought into the new framework named SBSC of SPIs.

To emphasize the main themes related to SPES, SPIs still adopt the Theme Framework as the basic structure, that is, the indicators should be organized under the five themes: social, economic, environmental, internal process, and learning and growth. Within these categories, indicators were organized according to objective, measures, targets and initiatives, which outline the different levels and the relationships of these indicators. Table 5.2 illustrates the essence of this framework with a matrix. It incorporates four elements of indicators along Objective-Measures-Targets-Initiatives (OMTI) horizontally and the five perspectives dimensions of SBSC vertically, namely social, economic, environmental, internal process, and learning and growth. Therefore, the SBSC model provides a systematic means

Table 5.2 SBSC Framework of SPIs

Perspectives	Objectives	Measures	Targets	Initiatives
Social				
Economic				
Environmental				
Internal process				
Learning and growth				

Adapted from UN DESA (2001).

of selecting and organizing indicators, which is based on the cause-and-effect relationships of horizontal and vertical dimensions.

5.2.2.2 Causalities of SBSC Framework

The causality among the indicators is the essential requirement of systematic indicators, which improves the rationality of indicator designing and selecting, and avoids the pretermission of some important indicators, for example, the framework of the SDIs (UNCSD), in which the environmental, economic, social and institutional indicators are linked with a causal chain of DSR. This SBSC framework contains two causalities in the binary matrix from vertical and horizontal dimensions.

Vertically, five themes (or five perspectives of the SBSC) are linked with the cause-and-effect relationships even linked to sustainable development strategy, which have been discussed in Chapter 4, and displayed on a strategy map (see Fig. 4.7). At the same time, the SBSC for SPES contains also a mix of input, output, outcome and impact measures weaving through the five perspectives, which form a causal chain among the measures (see Fig. 4.8). These outcome and impact measures reflect the final goals of sustainable development management in government, which tend to be lagging indicators. The performance drivers (input and output) are the ones that tend to be the leading indicators, which enable the achievement of the outcomes and impacts. And the two groups fit together to ensure that the operational improvement will be translated into long-term success of sustainable development and citizen satisfaction.

Horizontally, four elements of the SBSC (Objectives, Measures, Targets, Initiatives) outline another causality that translates the strategy into performance objectives and even specific initiatives, which based on the logic frame of strategic management. In the same way of the horizontal causality, the linkages of OMTI throughout the BSC are constructed with a series of if-then statements. Firstly, every perspective or theme will identify its specific **Objectives** that represent the expected outcomes stated as simply, concisely and explicitly as possible. For instance, the general objective of social dimension identifies its objective as “Social Equity”. Normally, if the general objective will be achieved, it is essential to reify them into several specific **Measures**, which are relevant to achieve the social goals towards sustainable development. The translation from objectives to measures is the most important step to formulate the intangible objective into manageable and measurable units of information, which will facilitate the evaluation of the condition of sustainable development or how well an organization is achieving its preset objectives. However, measurable isn’t equal to quantitative, moreover, objectives and measures should be assessed either on a sliding scale, or as a hit or miss, success or failure. After the performance measures are determined, the **Targets** will be chosen to represent the desired results of each performance measure, which must be achievable given the current situation, resources and time available. Finally, if we want to reach the performance targets, **Initiatives**, the relevant program, projects, or action plans with realistic timeframes, should be put in place. Therefore, the horizontal

causality of OMTI provides some mechanisms that ensure the strategy or objectives are translated into an operational plan or project step by step, while all elements can be accepted as benchmarks to check the sustainability performance.

In fact, some current indicators have acted with some similar causality already, or can be explained under the SBSC framework, for example, the famous 15 HIs published in the *Quality of life counts (1999)* in the UK (see Appendix C). As one of the greatest environmental threats the world is facing today, "Climate Change"(H9) accepts "reduction of greenhouse gases" as a **Objective** in the UK, because all countries party to the Climate Change Convention have acknowledged that greenhouse gases are causing global warming. In order to achieve this objective, a basket of six greenhouse gases were selected as **Measure** of their emissions. Under the Kyoto Protocol, the UK adopted a legally binding **Target** "to reduce emissions of the basket of six greenhouse gases by 12.5% relative to the 1990 level over the period 2008–2012". Due to the prediction that Carbon dioxide emissions will start increasing again after 2005, a domestic goal "to cut CO_2 emissions by 20% below 1990 levels by 2010" was appended. Moreover, the targets contained some relevant and time-bounded **Initiatives** to ensure the availability (DEFRA, 1999b). In order to "cut CO_2 emissions", the control of energy consumption and enhancement of energy efficiency selected as realistic initiatives became the sub-objectives and aroused a new cycle of OMTI, which will formulate into some new targets and indicators. For instance, some relevant indicators such as "Carbon dioxide emissions by end user", "Renewable Electricity", "Private cars CO_2 emission" were listed and analyzed as theme concerning "Climate change and energy" in "Sustainable development indicators in your pocket 2006" (DEFRA, 2006).

The SBSC framework incorporates two-dimensional causalities into one system. The vertical causality can ensure the appropriate themes under consideration, while the horizontal causality enables that the indicators in each perspective can be selected and developed according to the strategy and policy. Nevertheless, it must be recognized that there is no totally perfect framework for organizing and expressing the complexities and interrelationships of the objectives and measures encompassed by sustainable development. Comparing with the current framework of SDIs, the SBSC framework has the undeniable potential to provide a strategic control mechanism for the identification and selection of objectives and indicators.

5.2.3 Categories of SPIs

According to the SBSC framework, SPIs are described in the five categories in line with the five perspectives of SBSC, which can be divided further into two groups: Primary SPIs and Secondary SPIs. The Primary SPIs, or the lagging indicators, measure the achieved progress toward sustainable development including the actual conditions concerning social, economic and environmental dimensions and the relevant sustainability performance in government and its agencies. The Secondary SPIs play the role as the leading indicators to gauge the performance drivers of long-term

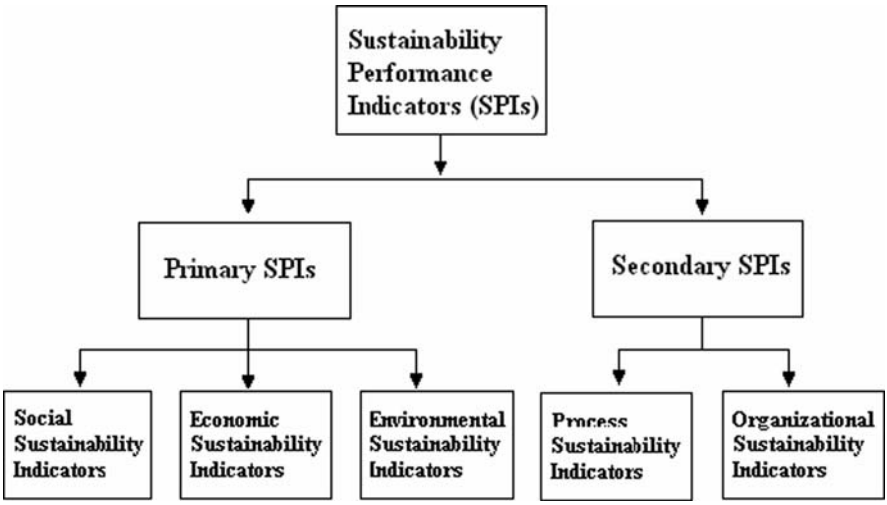

Fig. 5.2 Indicator Categories of SPIs. Adapted from Wathey and O'reilly (2000)

success, including the Process Sustainability Indicators and Organizational Sustainability Indicators. The Process Sustainability Indicators include both the strategic and operational control processes, both objective and subjective (citizen participation) process together, while the Organizational Sustainability Indicators contain those indicators such as the efforts to motivate and educate employees, improve the internal institutions, enhance information systems and financial management, i.e., the ability to learn and improve.

Figure 5.2 outlines the five categories of SPIs. Comparing with the present environmental performance indicators of ISO 14031, SPIs integrate the social, economic and environmental sustainability as primary objectives, and the internal process and organizational learning as secondary objectives into one system. The five categories of SPIs in two groups should be considered in a balanced manner. Any neglect or partiality may lead to the SGs and risks in the future. With the help of all the indicators, government can monitor both how well the sustainable development strategy is achieved, and how well the management process and capability building are contributing to their achievement.

5.2.3.1 Primary SPIs

The Primary SPIs, as introduced in the foregoing sections, provide two levels of information: one is the progress toward sustainable development from a macro perspective, which can represent a snapshot of long-term changes of ecosystem health and biological diversity; and the other is the performance of government and its agencies at the micro level, while government, as one of the most important individual units, has the responsibility to plan and implement the sustainable development as a national strategy. In order to facilitate the sustainability performance

evaluation, the causality between the macro conditions and the outcome of administrative behaviors should be further emphasized to identify the responsibility of relevant departments, because performance is searchable by department and by subject (Swanson et al., 2004). However, the causality between the impacts and outcomes isn't obvious, because of the combined influence of policy initiatives implemented by governments and the actions of the private sector, civil society and the nature environment. For example, Wathey and O'Reily (2000) point out, the ECIs provide information about the environmental conditions, which potentially is affected by the activities and services of organization, but can also be affected by many other factors or parties. Under the SBSC framework with two-dimensional causalities, the primary SPIs pay more attention to the causality among the impacts (measure the fundamental changes in people's well being) and outcomes (gauge the degree of behavioral change) of administrative behaviors of government and its agencies, which will be valuable to judge the accountability and responsibility of government and its agencies on the way toward sustainable development.

Moreover, another thing should be noted that the organization of themes and sub-themes within the three dimensions of sustainable development represents a guidance to select indicators, but this does not mean that issues should be considered exclusively within only one dimension (UN DESA, 2001). Ranganathan (1998) points out that the three components of sustainability can be represented according to Fig. 5.3, which means that there are some issues that are only related to one component, while others are linked to two and even three components. The social sub-theme of poverty, for example, has obvious and significant economic, environmental, and institutional linkages. The development of indicators also follows the same idea. The three-category indicators under the primary SPIs, environmental sustainability indicators, economic sustainability indicators and social sustainability indicators, are interdependent and most of them overlap among each other, which form seven sub-theme indicators:

- Social
- Economic
- Environmental
- Social-Economic
- Social-Environmental
- Economic-Environmental
- Social-Economic-Environmental

These indicators reflect the requirement of the integration and balance of sustainable development principles and finally combine all principles together to outline the social welfare. In addition, the integrated and balanced relationship among the primary SPIs can play an important role in raising awareness about the inter-linkages and trade-offs among the various dimensions of sustainable development (OECD, 2000b), which is meaningful for the decisions and behaviors concerning sustainable development issues in government.

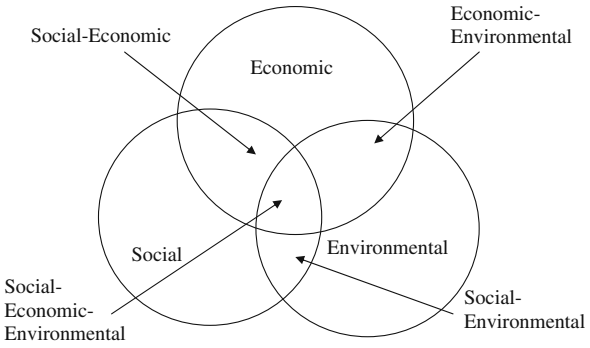

Fig. 5.3 Interaction of the Three Components of Sustainability. Adapted from Ranganathan (1998)

5.2.3.2 Secondary SPIs

The Secondary SPIs are designed to reinforce SDIs to meet the need of SPES, that is, to extend the evaluation scope from results to determinants. To accomplish this goal, the Secondary SPIs is defined to provide information about the management performance of government and its agencies, not only about the internal management efforts but also about the organizational capacity improvement. Corresponding to the foregoing discussion, the secondary SPIs are divided into two groups: process sustainability indicators and organizational sustainability indicators.

Process Sustainability Indicators (or Process SPIs), derived from the process indicators, measure and provide information about the performance of strategic planning, operations and improvement processes, focusing on the quality and time of activities and services. The research on NSDS in 19 countries by IISD states that the indicators for process monitoring have been developed and used in some countries (Swanson et al., 2004), however, Pintér et al. (2005) point out that SDIs are still often assigned to environmental agencies without the sufficient mandate. This political weakness of SDIs mirrors the relatively low weight of sustainable development in mainstream politics, with a lot of lip service for sustainable development but often insignificant for real consequences. To ensure that SDIs are integrated into key policy decisions, long-term plans and sustainable development strategies, instead of being an "add-on" to already existing and used statistical, measurement and reporting systems, Process SPIs should contain some new indicators concerning strategic planning and improvement process besides the operations/implementations process. That is, Process SPIs provide a mandate or mechanism to put a complete process of strategic management including planning, implementation and improvement process under control. The key areas to establish the extended Process SPIs are illustrated in Fig. 4.4.

When taking the strategic planning and improvement processes into consideration, a new set of indicators concerning "citizen participation" should be introduced. The advancement in participatory governance has been quite significant since the

concept of sustainable development was first mainstreamed in the late 1980s and early 1990s, but key challenges remain in a number of areas, including establishing a clear legal mandate or institutional control for the process (Swanson et al., 2004). In terms of establishing an institutional basis for the strategic process, a good solution is to build up a set of indicators, so that the participatory approaches are mirrored in the indicators used for their operationalisation. In a doctoral research, a set of indicators for Network of Interested Partners (NIP) have been developed by Coelho (2005), which reflect the specific activities of some of the partners that occur through the process.

Organizational Sustainability Indicators (or Organizational SPIs), just as its name implies, are a set of indicators to measure the organizational learning and growth capacity toward sustainability. Capacity building plays a key role in the success or failure of policies and the bureaucracies that implement the policies. To achieve the mission and strategy, in the learning and growth perspective of the SBSC, four measures have been defined to provide the infrastructure to achieve the objectives of other four perspectives, including the employee capacity, institutional system, information system and financial investment. These indicators relating to the investment for the future are the most valuable indicators for SPES, because they are the relative innovative part, so that the most difficult part to develop.

Following the ideas of SBSC framework, the objectives, measures, targets and initiatives will be formulated into the Organizational SPIs, which are not only the quantified indicators but also "yes or no" questions sometimes. For instance, the core employee measurement "employee capacity" is identified to develop the human capital under the theme of learning and growth. According to the analysis in Chapter 4, the objective of this sub-theme is to improve the employee capacity and to judge if the employee has the necessary knowledge and skills, that is, "percentage of the employee with the professional qualification certificate" will be a good measure. To improve the employee capacity, employee training and retraining will be accepted as one of the most important measures. So, targets and initiatives will be selected with time-bounded, such as, "number or percentage (trained/to be trained) of employee trained per year", or "training hours of every employee per month", or "number or percentages of employee untrained in the past 3 years running". Moreover, institutionalization as one measure to improve the organizational capacity is accepted as one objective, because it is necessary to build up a set of rules which explicitly state duties, responsibilities, standardized procedures and conduct of employees in the organization. In order to achieve this objective, the written regulations and unwritten conducting mechanism set the institution, procedure and divisions of work among departments to build up the organizational structure, which are also selected as measures. Following is the targets, which identifies the existence and efficiency of such an institution or mechanism, and the necessary initiatives to review or update the institution. Therefore, questions such as "does the organization have written policies and procedures for sustainable development process that are regularly implemented and updated?", or "is there the responsibility and coordination mechanism? ", or "is there one continuous learning model?" to identify the

level of institutionalization of the organizational system that supports the success of a modern organization to translate the strategy into actions.

5.2.4 Selecting SPIs for SPES

It's easy enough to list the characteristics of ideal indicators, but not so easy to find indicators that actually meet these ideal characteristics for all perspectives or themes. Following the SBSC framework and the categories of SPIs, the next step is to select the indicators for SPES practically. However, it is beyond the capacity and timeframe of this research to develop a comprehensive and completive set of SPIs, because of the requirement of a large number of human and financial resources. For example, the UNCSD Work Program on SDIs (1995–2000) contains an indicator pilot-testing phase over a 3-year period, that 22 countries volunteered to participate in the utilization and experiment with the proposed initial set of indicators and related methodologies (UN DESA, 2001). Needless to say, a full SPI set will have to await additional survey data and pilot testing. So, this section focuses on developing process and some key criteria for selecting indicators, while a preliminary set of framework SPIs will be worked out finally, based on the SBSC framework and the key measures marked in the strategy map in Chapter 4.

5.2.4.1 Developing Process of SPIs

The procedures and processes of developing, testing and using indicators for sustainable development will vary from country to country, depending on specific conditions of the country, national priorities and objectives, infrastructure, expertise and the availability of data and other information for decision-making (UN DESA, 2001). Even though the SBSC framework has determined the indicator focus and structure, it is still a complex process. Besides, SPIs has an important effect on the SPES, therefore it is critical to manage this process with care and consideration. Learning from the processes of selecting indicators adapted by USAID (1996), Wathey & O'Reilly (2000), Segnestam (2002) and others, the developing process comprises the following four steps, which describe the actions taken in the most common indicator initiatives:

- Developing a list of possible indicators
- Testing and assessing the possible indicators
- Selecting the "appropriate" indicators
- Implementing and improving indicators continuously

Based on the SBSC framework, a set of possible indicators should be developed. During the process of selecting indicators, don't settle too quickly on the one that come most conveniently or obviously to mind, but start with a list of alternatives, which reflect the inter-linkages between the monitored aspects, and can then be assessed against a set of selection criteria. To create the initial list of possible

indicators, it is necessary to view in all aspects and from all perspectives, i.e., to allow sufficient opportunity for all ideas and creativity, including comprehensive sources (USAID, 1996). First of all, indicators may be selected by reference to regulation and policy concerning sustainable development, by consultations with stakeholders, especially those in the vicinity of the operation, by consultations with experts in the substantive program area and the experience of other operating units with similar indicators. Moreover, for some special issues, such as the environmental conversation, it is essential to use for reference to the ecology and biology literatures, which have developed techniques that provide relatively robust indicators of ecosystem health based on measures such as species diversity, carrying capacity, key species, etc. (Warhurst, 2002).

Next, testing and assessment of each possible indicator on the initial list will be performed. Experience suggests using some key criteria to judge an indicator's appropriateness and utility. During the comparing, care should be taken to ensure that two indicators are similar enough to compare, or at least that the differences are explicit. USAID applied a matrix with the seven criteria arrayed across the top and the candidate indicators listed down the left side when assessing and comparing possible indicators. With a simple scoring scale, each candidate indicator needs to be rated against each criterion. These ratings will help give an overall sense of the indicator's relative merit in the selection process (USAID, 1996). Normally, the assessment is accompanied by a pilot testing, just like the second edition of SDIs proposed by UNCSD, which have been tested in 22 countries to gain experience with the use of indicators. The test focuses on the applicability according to national goals and priorities of sustainable development, in order to develop the indicators and its organizational framework for sustainable development.

There are usually many possible indicators, but some are more appropriate and useful than others. After testing and adjustment of the indicators as necessary, a set of appropriate final indicators will be selected that will be used in the performance monitoring system. Because of the diversity of indicators, there is no one measure of what is the best. During the selection of the "appropriate" indicators, a citizen participatory approach will be emphasized again. Furthermore, because the requirement of time and resource investment, the selected indicators should be the optimum set that meets the need for management-useful information at a reasonable cost (USAID, 1996). That is, it is important to keep the balance between the information content of various indicators and developing costs. Finally, the selected indicators will be used in practice and improved continually.

5.2.4.2 Key Criteria for Selecting SPIs

In order to select and compare the possible indicators, a set of key criteria will be identified to narrow down the possible indicators to the critical few that articulate the strategy as well as to make it communicable to various stakeholders. There are a number of selection criteria that can be applied to ensure that the indicators

are useful and effective in their provision of information to the decision-makers (Segnestam, 2002). In order to assist the selection and application of SDIs, an international group of measurement practitioners and researchers from five continents published the *Bellagio Principles: Guidelines for Practical Assessment of Progress Toward Sustainable Development* in 1996 (Hardi, 1997), which identifies ten principles in four aspects as criteria for assessing progress towards sustainable development including the selection, design, interpretation and communication of indicators (Hardi & Zdan, 1997; Hardi, 1997; Hass et al., 2002). In practice, OECD developed the criteria for selecting environmental indicators, including policy relevance and usefulness for the user, analytical soundness and measurability (OECD, 2000b). An in-depth analysis of potential indicators appropriate for the core set has been conducted against selection criteria established under the UNCSD Indicator Work Program too (UN DESA, 2001). The researches on indicators, such as Ye and Luan (1996), Segnestam (2002), Niven (2003) and so on, listed so many selection criteria. Most of the selection criteria can be summarized as "SMART", which is a way to evaluate the objectives or targets setting about whether or not the objective is smart. SMART stands for Specific, Measurable, Achievable, Relevant and Time-based (Platt, 2002):

- **Specific**: clear and unambiguous, easy to understand, linked to a rate, number, percentage or frequency;
- **Measurable**: normative measures, both qualitative and quantitative;
- **Achievable**: within the capabilities of organizations to achieve;
- **Relevance**: pertinent to strategy and objectives, and important to the organization;
- **Time-based**: bounded up with time limit in that the objective must be achieved by a specified date.

Hao and Zhao (2005) point out that the BSC is a SMART system describing not only the targets but also the methods, timetables and resources needed to accomplish the task. In the SBSC framework, SMART will be introduced as a method about how to select and develop SPIs, along four setting stages of Objective, Measures, Targets and Initiatives (OMTI). Besides, three things should be given special attentions: the causality and balance within the indicator system, and participatory approach.

Causality Within the Indicator System

The selected indicators should link together through the five perspectives of the SBSC. The identification and assessment of linkages between the results and determinants, among the economic, social and environmental principles of sustainable development, and across the four elements (OMTI) in every perspective further facilitate decision-making and performance evaluation at all levels. Therefore, the development and selection of indicators may best be consistent with the sustainable

development strategy and objectives, which will ensure to translate the strategy into actions exactly.

Balance Among Various Indicators

Under the SBSC framework, the idea of "balance" becomes more significant, because the concept of balance is a central and basic character of the BSC. It is important that a balanced set of indicators that provides an assessment of the whole area is developed, rather than focusing on one individual indicator. The "Balance" between financial and non-financial indicators, between internal and external stakeholders, between lagging and leading indicators, between the environmental performance and other human goals, makes the SPIs for SPES more sophisticated over time.

Broad Participatory Approach

Citizen participation, involving experts from the areas of economics, social sciences and physical sciences and policy makers as well as incorporating non-governmental organization and non-expert citizen participants, is crucial for the sustainability of the NSDS program. A participatory approach in selecting indicators for the performance evaluation system thus can be an effective way of integrating a wider range of relevant aspects and obtaining the consensus throughout the process. Experience shows broad public participation in the identification of indicator sets can effectively link the task of setting measurable targets with better understanding of citizen's needs, which can facilitate the transformation of mission and strategy into actions.

5.2.4.3 A Set of Framework SPIs for SPES

After having considered all the conceptual aspects in indicator development, the practical phase begins. Because there is no universal set of indicators that is equally applicable in all cases, a smaller set of core or "headline" indicators tends to be the most effective approach, which can provide more extensive information and facilitate the communication with the general public in a simple way (OECD, 2000a). The indicators or indicator system of UNCSD (UN DESA, 2001), OECD (2000a) and World Bank (2000) have proposed a set of core SDIs with different standard and emphasis. As mentioned in the foregoing text, 20 framework indicators in the UK and 21 key indicators in Germany are at the tip of a much larger pyramid of SDIs. Therefore, based on the SBSC, learning from the existing SDIs and another management indicators, a set of possible framework SPIs for SPES can be identified as shown in Table 5.3. These 14 framework SPIs and their possible indicators are just the starting point for the national SPIs program. Some testing and improvement process should be placed on the agenda for the further research.

Table 5.3 A Set of Framework SPIs

Theme	Sub-theme (objectives)	No.	Possible indicators
Social	Social equity	1	Percent of population with access to primary health care or education facilities; Gini index of income inequality
	Social Development	2	Immunization against infectious childhood diseases; education investment as % of GDP
Environmental	Environmental Condition	3	Emissions of greenhouse gases; Forest area as a percent of land area
	Environmental conservation	4	Environmental investment as % of GDP; Effectives of governmental projects
Economic	Economy growth	5	GDP per capita; Annual energy consumption per capita
	Financial efficiency	6	Financial debt to GNP Ratio; Governmental budget implementation
Internal process	Strategic planning	7	Integration of sustainable development into the strategic planning and annual performance objectives
	Excellent Operation	8	Quality of strategy implementation Achievement of the preset objectives
	Continuous improvement	9	Implementation of the Feedback mechanism; regular external reporting and internal communication
	Citizen participation	10	To what extent has the target community been involved in identifying their needs and planning for implementation
Learning and growth	Employee capability	11	Percentage of the employee with the professional qualification certificate; Percentage of the employee trained per year
	Institutional system	12	Existence and efficiency of written policies and procedures for sustainable development strategic management; Regular monitoring and evaluation
	Information system	13	Information access inside of the organization; Number of the guests of homepage
	Financial investment	14	Cost control of budgeting; Percentage of reduction in the cost

Note: Some possible indicators are from the indicators set of UNDSD (UN DESA, 2001), Epstein and Wisner (2001), OECD (2000a) and so on.

5.3 E-Government for Sustainable Development

Once the SPIs based on the SBSC framework is in place, the data must be collected, presented and analyzed to interpret trends and detect problems of the sustainability management in government and its agencies. No matter which approach is used, the reliable, updated frequently and regularly, good quality data are required to quantify indicators (Hass et al., 2002). However, the SPIs based on the SBSC framework still have some inherent weaknesses and continue to be affected by serious technical

challenges, particularly related to data problems, which will become the barriers during the implementation of SPIs.

5.3.1 Barriers of SPIs Based on SBSC Framework

According to the Chapter 40 of *Agenda 21* (UN, 1992), in order to provide solid bases for decision-making and to contribute to a self-regulating sustainability of integrated environment and development systems, the SDIs is developed to "bridge the information gaps" to facilitate the communication at all levels, from the senior decision makers at the national and international levels to the grass-roots and individual levels. The SPIs, designed to remove the SGs of the traditional performance evaluation system in government, have one distinct character that their content extends from the traditional financial to the non-financial performance measures, which makes the performance evaluation approaches develop from results-based operational control to the strategic control. Just like the SDIs, SPIs have one similar function to remove the information gaps for the evaluators and the public, too. As the framework of SPIs, the SBSC also established a comprehensive information system, by minimizing information overload through limiting the number of measures within the five perspectives, which forces managers to focus on the handful of measures that are most critical. On the other hand, this framework extends the categories of SPIs from the primary to the secondary, thereby, the amount of indicators are enhancive indeed. Anthony (1998) demonstrates that there are many pitfalls during the implementation of BSC, and one of them is that too many measures result in overload of information, which may lead the manager to risk losing focus and trying to do too many things. As one of the BSC's eleven deadly sins addressed by Nair (2004), too much information during gathering data is a technology and process challenge in identifying the correct and relevant sources of performance data and drivers. Li (2006) argues, the indicators based on the BSC are too numerous and jumbled, and the multilateral cause-and-effect relationships across the perspectives make the evaluation and analysis more complex. A research on the application of the BSC in China shows, the personal departments and managers which had to carry the additional burden created by so many documents and the statistical data will be overwhelmed by the workloads, which even has the negative effect on the efficiency and performance of the organizations sometimes (Gou & Chen, 2004).

Furthermore, *Agenda 21* states there is a general lack of capacity for the collection and assessment of data and for the transformation into useful information, particularly in developing countries, and in many areas at the international level (UN, 1992). The lack of adequate data and the significant costs in collecting additional data limit the implementation of an ideal and common set of indicators (OECD, 2000a). When the SPIs extend the scope or content to some new areas, their application may have to wait for new data to be collected. As the development of indicators for SPES engages in ideal theorizing without a rigorous review of national statistical data collection systems, they inevitably lead to a

discovery of major data gaps and data quality issues. For example, there is no data or database available from existing accounting systems and statistical surveys, or there are many difficulties in getting fitting data, or the definitions of standards and statistics caliber issues differ among different systems. Moreover, the BSC emphasizes the static analysis and relative steady indicator system, but pay less attention to the dynamic development of strategic management (Li, 2006). To ensure that there are reliable systems for collecting relevant information, the BSC should be updated with current, operationally relevant information (Wetter, Roy, & Olve, 2000). Luo and Yu (2004) state that an integrated and dynamic indicator system and database based on the Internet is essential to facilitate the real time control of SPES.

In the digital age, the level of information systems determines the accessibility of data and efficiency of information processing, i.e., influences the application of SPES and SPIs in the public sector. Some researches have been conducted to integrate the BSC and information-technology. On the one side, the BSC provides a framework for the government to determine targets and performance indicators to control and co-ordinate the departmental strategy. The use of the BSC concept within information system can assist in the strategic decision-making, strategic control and evaluation activities, and then improve the value of public services. On the other side, the application of information system and Internet technology in government have been approved valuable in improving the information availability and the date processing efficiency at a lower cost, which can also make the implementation process of strategic management and control system transparent, and can provide detailed information for efficient citizen participation by publishing the key indicators on the web (Gueorguiev, Dimitrova, Komitska, Traykov, & Spassov, 2005). The *Agenda 21* called on the establishment and enhancement of electronic networking capabilities, in order to make relevant information accessible in the form and at the time (UN, 1992). Therefore, in striving to remove the above barriers relating to the information overload and inaccessibility, it is very necessary for SPIs to integrate with the information system and new technology more closely and deeply.

5.3.2 E-Government, Citizen Participation and Sustainable Development

Information technology in our century opened the gate to the third era of technology, and Electronic government (E-government) is one important branch of applied information technology (Karpen, 2005). E-government has emerged to respond to four main challenges (the public service, security, transparency and trust) of the public administration over the past decade, parallel to the rapid expansion of the Internet in many regions of the world (Roy, 2006). Karpen (2005) states, according to the separation-of-powers, E-government in its broadest sense is grouped under three heads: E-legislation, E-administration and E-judiciary. And E-administration is the most visible element of E-government that facilitates inner-administrative

communication towards the optimistic perceptions of a "paperless bureaucracy". Canada, as one of the world's leading countries where a number of basic infrastructure conditions are in place to warrant interest and investment in online mechanisms, initiated the E-government in the mid-1990s (Roy, 2006). In 2001, President Bush of USA proposed *Expanding E-Government* as one of the five key elements of the *President's Management Agenda* (PMA), to make the Federal government more results-oriented, market-based (efficient) and citizen-centered. This effort is designed to make better use of information technology investments to eliminate the wasteful federal spending, reduce government's paperwork burden on citizens and businesses, and improve government response time to citizens – from weeks down to minutes (Government of USA, 2003). In the paper *New Public Management Is Dead – Long Live Digital-Era Governance*, Dunleavy, Margetts, Bastow, and Tinkler (2006) assert the character of the post-NPM regime is toward "digital-era governance" (DEG), which offers a perhaps unique opportunity to create self-sustaining change, in a broad range of closely connected technological, organizational, cultural, and social effects.

Roy (2006) argues that the first decade of E-government features online service underpinned by a technically secure infrastructure and progressing digitalization of administrative processes. The most important anticipated benefits of E-government include improvement of internal efficiency, convenience delivery of public services, and better accessibility of public services. Moreover, in the light of the trend "citizen-orientation" of public service reform, E-government creates a new relation between the Government and the Citizen (Stylianidis, 2005). Stylianidis (2005) state, "the most important consequence of using modern technology is the significant influence in the functioning of modern Democracy", i.e. new technologies and the web allow us to join a new age of a quasi-direct Democracy, where the citizen will be able to be informed immediately, completely and multi-dimensionally about the legislative initiatives of the Parliament or about the policies of the executive authorities (Stylianidis, 2005). Chen et al. (2004)show that the application of new information and communication technology to governing matters is thought to be the cure for the cost-increase as a result of mounting citizen participation in the governmental affairs. Thus, information technology gives the citizens more possibility to be served better and cheaper, fast and transparently (Stylianidis, 2005).

When sustainable development is accepted as a national strategy, in the information age, a harmonious, democratic and sustainable society relies much more on the innovation and implementation of new information technology. E-government makes citizen participation in public policy decision-making more expansive and direct so as to enable broader influence in policy outcomes as more individuals involved could yield smarter policies, which can keep the government closer to the acceptance of the public. *Agenda 21* (UN, 1992) advocated that countries, international organizations, and non-governmental organizations should exploit various initiatives for electronic links to support information sharing, to provide access to databases and other information sources, to facilitate communication for meeting broader objectives and intergovernmental negotiations, and to monitor conventions and efforts for sustainable development. For the implementation of SPIs and SPES,

E-government refers to the government's use of information technology to improve the data availability and quality, the efficiency of date collection and processing, and the capability to update the information frequently, which can facilitate the better transparency and accountability of public service. For example, in Canada, a website has been created and maintained by SDinfo[27] for the purpose of providing Canadians with direct access to information about sustainable development. And the monitoring and reporting in the UK is also supported by a sustainable development website,[28] hosted by the DEFRA' Sustainable Development Unit, which includes annual reports on progress towards sustainable development, updates on performance targets, and links to the Green Ministers' annual report (Swanson et al., 2004). Moreover, the application of new technology instruments leads to the new challenges to the SPES in government, which should be paid more attention in the future research.

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[27] See its homepage at http://www.sdinfo.gc.ca.

[28] See its homepage at http://www.defra.gov.uk.

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Chapter 6
Conclusion

Abstract In this concluding chapter, the central issues discussed in this book will be restated concisely. This chapter is organized in three sections. The first section reviews the contribution of the research. The second section discusses some limitations that this research encounters. The third section presents some implications for the new approach and gives an overview of the areas that could benefit from additional research.

Keywords Sustainability performance evaluation system · Sustainability balanced scorecard · Sustainability performance indicators · E-government

In China, there is a very old story on G*oing South by Driving the Carriage North*. Once a man wanted to go to the south, but his carriage was heading north. A person passing by asked him: "If you are going to the south, why is your carriage heading north?" The man answered: "My horse is good at running, my driver is highly skilled at driving, and I have enough money."[29] This story, coming down to us from the Zhanguo Time in China (more than 2000 years ago), indicates that one's action was the opposite to one's intention, which can be interpreted into the principles of the strategic management in modern society. That is, the success of organizations or programs not only depends on the productivity (good-running horse), manager and employee capability (highly-skilled driver) and financial support (enough money), but also is determined by the strategic orientation. If the strategy and objectives setting errs from the original mission or vision, the excellent operations and efficient management will be inefficient and ineffective, and it may even bring on the worse results, as well as the wastage of financial investments. This story emphasizes the importance of strategic control, which is just the point that this study makes great efforts to demonstrate and implement in modern society. This concluding chapter will review the central issues firstly.

[29]The English version of this story is from the website at http://www.7880.com.

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6.1 Brief Summary and Contribution

This study sets out with the objective to establish a new model "Sustainability Performance Evaluation System" (SPES), aiming at finding the solution for the limitations of the current performance evaluation system in government. In order to build up a new system, gap analysis is conducted firstly to identify and formulate the current problems into three "Strategic Gaps" (SGs) by tracking and analyzing the development of evaluation systems in government within the context of sustainable development and the public sector reform. Based on EPE, strategic performance evaluation and the NPM/post-NPM theory, a three-dimensional conceptual framework is built up in two steps: the first step is to learn and adopt the business methods, such as, ISO 14031 as a platform with the systemic structure and indicator set, and the BSC providing the framework to extend the objectives and measures from the results to the determinants, which forms the two-dimensional framework named "Sustainability Performance Evaluation" (SPE); the second step is to modify the two-dimensional model to meet the requirement of public service in a democracy society, by emphasizing the citizen satisfaction and participation. Following is an outline of SPES in government presented in Chapter 3, which contains some basic components to explain "what" and "how" to develop a new performance evaluation model of sustainability management in government. This new system integrates three theories and methods into one system organically, which reaffirms especially the mission of government to meet the public needs, and integrates citizen participation into the control system to balance the overemphasis on managerial performance in public administration. This reflects not only the requirement of public sector reform but also the core objective of sustainable development to build up a democratic and harmonious society.

As the principal method of this research, the powerful tool BSC is improved into "Sustainability Balanced Scorecard" (SBSC) for the SPES in Chapter 4, which rebalances the traditional BSC from two dimensions. Firstly, it accepts the three pillars of sustainable development as three-dimensional primary objectives, so that the social, economic and environmental issues can be taken into account of decision-making and performance evaluation in a balanced and integrated manner. Moreover, the SBSC is modified to fit the requirement of the public service, such as, adding the citizen participation into the internal process, putting the financial investment in the learning and growth perspective as one input measure. The SBSC for SPES thus presents a new BSC architecture, which can provide a framework to bridge all of the three SGs and promote the efficient strategic control of the NSDS process and sustainability management in government and its agencies. The SBSC still plays the role as a connecting link between the preceding and the following, between the fundamental theory and applied instrument, by refining the evaluation scope of SPES further, and providing a framework to translate the missions and strategies into a set of performance indicators for SPES in government.

In order to facilitate the implementation of this new system SPES, Sustainability Performance Indicators (SPIs) are developed and selected finally, which embody all the ideas and argumentations discussed in this book. The development of SPIs is

built on the review and analysis of the SDIs of UNCSD and applied in four countries, indicating the limitations and successful experiences of the existing indicators or indicator system. Following the framework of SBSC, the content of SPIs extends to the strategic process and organizational sustainability, and in each category of SPIs indicators is organized into four groups: objectives, measures, targets and initiatives. The two dimensional causality within the SBSC framework provides a mechanism to identify the most important elements and develop them into SPIs. At last, 14 framework SPIs are proposed as one consequence of this research, which will give some valuable suggestions for the future research and practice of indicator selection and performance evaluation in government.

Therefore, based on the ISO 14031 and SBSC, with 14 framework SPIs, the rudiment of SPES comes into being. First of all, this system, comparing with the current performance evaluation system in government, pays more attention to the strategic control besides the operational control, which reflects the requirement of long-term success in the mission-driven government. Secondly, this system improves the traditional environmental performance evaluation into the new phase of sustainability performance evaluation in government, emphasizing the integrated and balanced three-dimensional objectives of sustainable development, which answers for the suggestion of NSDS promoted by the UN since 1992 veritably. Furthermore, the reaffirmation of citizen satisfaction and participation in SPES proposes a meaningful way to rectify the overemphasis of managerial performance in the public sector, as well as to pay attention to both public accountability and performance improvement. These principles are significant for the development of performance evaluation in government, for the organizational sustainability of government and its agencies, and for the national and local progress towards sustainable development in the twenty-first century.

6.2 Limitations of This Research

Limitations of this research have been mentioned in several chapters before. Some of them concern the proposed system itself. However, there are also some very important issues, the thorough elaboration of which would go beyond the time scope and capability of the research, and thus had to be left out and conducted future work.

The limitations of the research are first addressed by discussing the three SGs in the introduction part, which identify the current problems and structure the three-dimensional conceptual framework of the new system. However, it is necessary to illuminate again that there are still other problems of current performance evaluation system in government besides the discussed three aspects, which maybe suggest other ideas to improve the existing system. This study does not exclude the possibility of other weaknesses, but gives sole attention to the three dimensions and the three methods concerned, because of the time limitation and other understandable reasons.

Moreover, an obstacle in the research is found through the reaffirmation of the citizen satisfaction on the public service. In order to remove the third SG, performance evaluation practice should be improved to measure if the citizens are satisfied with the public service and to balance the overemphasis of managerial performance in the public sector. However, due to the technical problems of using the subjective data to measure service performance, citizen satisfaction is formulated into three tangible principles of sustainable development (social equity, economic growth, and environmental protection), which are considered as specific and objective targets to meet the needs of citizens between generations in general. This substitution is based on the assumption that the successful progress towards NSDS can enable the citizen satisfaction, which may face doubts when the causal relation among a policy initiative, a specific sustainable development outcome and citizen satisfaction is not so obvious. To solve this common analytical problem suffered in the performance evaluation and general management theory, the lack of certain causality between actions and impacts, this research adopts the "citizen participation" as one objective control measure to remove the gaps between excellent performance and citizen satisfaction. This approach extends the evaluation scope to the standardized participatory approach, which can ensure that the performance evaluation focuses on what the public really cares about and perfect the objective performance evaluation further. In addition, it is also a valuable way to promote the institutionalization of the participatory process in the public strategic planning and implementation, and achieve the long-term success and citizen satisfaction with public service. However, the control of citizen participatory process is just an indirect measurement, which plays the role as a proxy for substantive assessment of the citizen satisfaction. Due to the complexities of the balance between the subjective public opinion and the objective performance evaluation, the subjective data from social surveys on citizen satisfaction are considered as a complement of the objective evaluation system, and are given less attention in this book. Therefore, the SPES is merely a quasi citizen-oriented performance evaluation system, which attaches importance to the citizen satisfaction as ultimate objective, but only focuses on the development of an objective SPES, and virtually moves slowly on the cooperation and harmony between the subjective and objective evaluation approaches.

Another limitation in this research lies in the information overload and inaccessibility during the implementation of SPIs, which has been discussed in the last section of Chapter 4. Because the development of SPIs engages in ideal theorizing without a rigorous review of national statistical data collection systems, they inevitably lead to a discovery of data gaps and data quality issues. In parallel with the information technology innovation, E-government has emerged to facilitate inner-administrative communication towards the optimistic perceptions of a "paperless bureaucracy", by improving the data availability and quality, the efficiency of data collection and processing, and the capability to update the information frequently. However, the application of new technology instruments, such as, progressing digitalization of administrative processes, leads to the new challenges to the SPES in government. Although there is one framework indicator named "information system" put in the Organizational SPIs, it only focuses on the input control, but neglects

other measures such as the internal digitalized process and the information management effectiveness in SPES. Hence it is essential to put the research on the agenda, focusing on the theory development and technology innovation of SPES in the information time.

Finally, with the purpose of seeking after a future model of performance evaluation system for Chinese government, this study hasn't conducted enough specific empirical analysis or field study. Normally, a new system needs some field-testings or case studies, which require more time and resource investment, such as, the UNCSD's SDIs pilot-testing over a three-year period in 22 countries. Even though the SPES has been designed by summarizing the development and experiments in government worldwide, and the case study on the SDIs and SPE in China has been made too, they focus only on the international comparative study with the purpose of identifying the limitations and weaknesses of the current performance evaluation system. Therefore, this research is basically a theoretic exploration, but makes insufficient field study in China.

6.3 Further Research

The contribution and limitations presented in this research provide different possible directions for the future research. Whereas some of them concern straightforward extensions of the presented approach and its tool support, there are also possibilities to combine the results of the study with other research areas. As the most important and interesting issues, the following further research should be emphasized:

- **To search for the feasible approaches to integrate the subjective evaluation approaches into the objective SPES:** Because objective evaluation is still not sufficient and comprehensive, especially when some important factors are intangible or can't be quantified and monetarized, SPES should pay more attention to the substantive evaluation to remove the gaps of objective evaluation. Otherwise, due to the limitations of subjective data, it is necessary to look for the feasible approaches to integrate the subjective and the objective evaluation together, which can promote the performance and public accountability of public service in government. In theory, the causality between the objective and subjective measures will be given continual attention as one core theme in the management and behavioral-administrative sciences field. With the help of stakeholders' analysis, some subjective expectations of citizens can be translated into the specific objectives, which will be formulated into indicators to promote the institutionalization of these subjective approaches. And the results of the social surveys should be accepted as one impact measure in the SPIs. Of course, this further research depends on more field study and a continuous improvement process, based on the sound foundation provided by the actual research in this book.
- **To improve the SPES for the E-government:** In the information age, the application of new information technology has been one character of the post-NPM,

while E-government has deeply changed the administrative structure and methods worldwide. To respond to the new challenges, the SPES should develop itself further, and integrate with the information system in government closely, such as, including the internal digitalized process as secondary objective and the information management outcomes as one primary objective in SPES. Moreover, some new instruments based on computers and the Internet should be developed to facilitate the data analysis and processing for SPES. For example, building on the BSC, some Internet-based software has been developed and used to support the performance evaluation, which are designed to facilitate data gathering, processing, presentation, communication within the organization and external reporting.

- **To test and improve the SPES and SPIs for their implementation in China:** Although this research engages in ideal theorizing, it does suggest possible directions for future research and practice in China, such as, the 14 framework SPIs, which can be adopted as a starting point for the design and development of SPIs for Chinese government. Furthermore, in order to introduce and transform the SPES and SPIs to China successfully, it is very indispensable to make more tests and improvements, according to the specific strategy and policy, social actuality, culture, economic and nature environment in China. Owing to the openness of SBSC, it is foreseeable that the SPES has the potential to be improved into the newly applied model in China to strengthen the government reform and improve the public administration and services quality within the context of sustainable development being accepted as the national strategy.

Appendices

Appendix A: National Sustainable Development Strategies – The Global Picture

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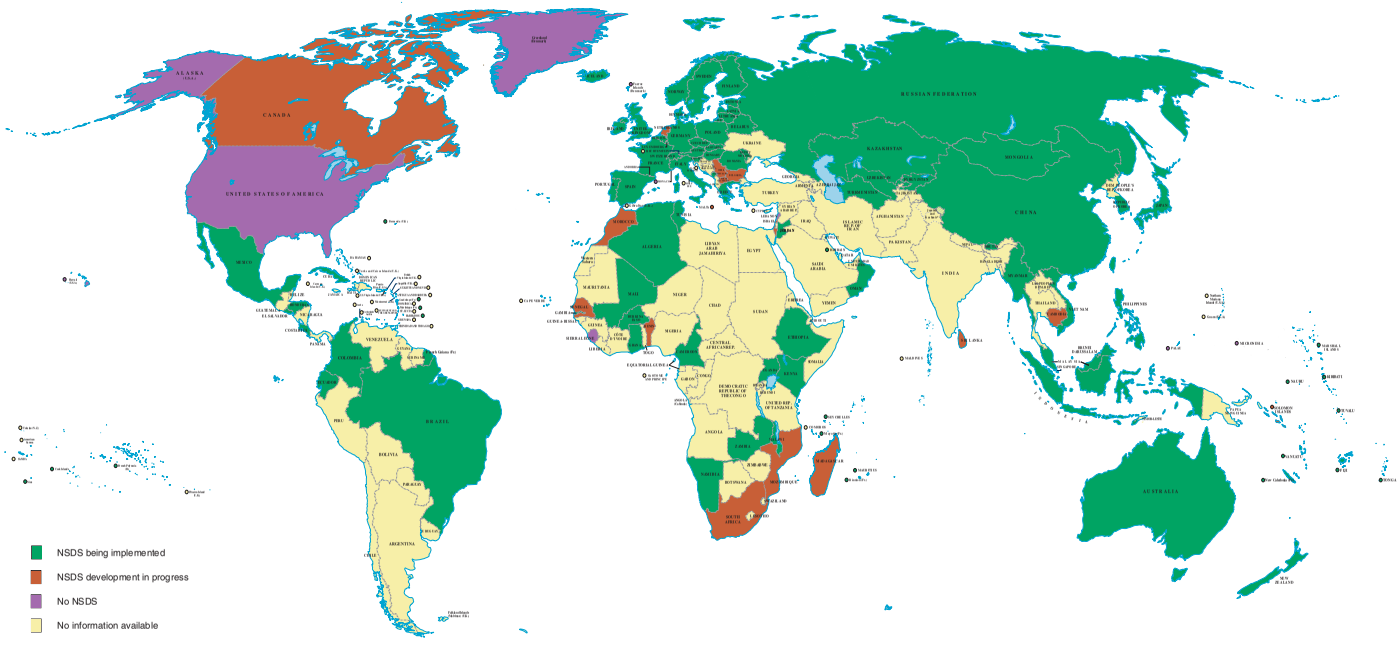
National sustainable development strategies: The global picture



The map tracks progress towards the WSSD (2002) target for countries to formulate and begin implementation of national sustainable development strategies by 2005. The map is updated on a regular basis.
We encourage Governments to submit new information or advise us of corrections through dsd@un.org.

Last update: 4/30/2008

The designations employed and the presentation of material on this map do not imply the expression of any opinion whatsoever on the part of the Secretariat of the United Nations concerning the legal status of any country, territory, city or area or of its authorities, or concerning the delimitation of its frontiers or boundaries.

* Dotted line represents approximately the Line of Control in Jammu and Kashmir agreed upon by India and Pakistan. The final status has not yet been agreed upon by the parties.
Cross-hatch with the colours used for Jammu & Kashmir (neutral colour) and China

Source: UN Division for Sustainable Development (UNDSD), *National Sustainable Development Strategies: The Global Picture* (last updated 2008). Retrieved March 2009, from http://www.un.org/esa/sustdev/natlinfo/nsds/nsds_map2008.pdf

Appendix B: UNCSD Theme SDIs Framework (2001)

SOCIAL		
Theme	Sub-theme	Indicator
Equity	Poverty (3)	Percent of Population Living below Poverty Line
		Gini Index of Income Inequality
		Unemployment Rate
	Gender Equality (24)	Ratio of Average Female Wage to Male Wage
Health (6)	Nutritional Status	Nutritional Status of Children
	Mortality	Mortality Rate Under 5 Years Old
		Life Expectancy at Birth
	Sanitation	Percent of Population with Adequate Sewage Disposal Facilities
	Drinking Water	Population with Access to Safe Drinking Water
	Healthcare Delivery	Percent of Population with Access to Primary Health Care Facilities
		Immunization Against Infectious Childhood Diseases
		Contraceptive Prevalence Rate
Education (36)	Education Level	Children Reaching Grade 5 of Primary Education
		Adult Secondary Education Achievement Level
	Literacy	Adult Literacy Rate
Housing (7)	Living Conditions	Floor Area per Person
Security	Crime (36, 24)	Number of Recorded Crimes per 100,000 Population
Population (5)	Population Change	Population Growth Rate
		Population of Urban Formal and Informal Settlements

ENVIRONMENTAL		
Theme	Sub-theme	Indicator
Atmosphere (9)	Climate Change	Emissions of Greenhouse Gases
	Ozone layer depletion	Consumption of Ozone Depleting Substances
	Air Quality	Ambient Concentration of Air Pollutants in Urban Areas
Land (10)	Agriculture (14)	Arable and Permanent Crop Land Area

(cont.)

ENVIRONMENTAL		
Theme	Sub-theme	Indicator
		Use of Fertilizers
		Use of Agricultural Pesticides
	Forests (11)	Forest Area as a Percent of Land Area
		Wood Harvesting Intensity
	Desertification (12)	Land Affected by Desertification
	Urbanization (7)	Area of Urban Formal and Informal Settlements
Oceans, Seas and Coasts (17)	Coastal Zone	Algae Concentration in Coastal Waters
		Percent of Total Population Living in Coastal Areas
	Fisheries	Annual Catch by Major Species
Fresh water (18)	Water Quantity	Annual Withdrawal of Ground and Surface Water as a Percent of Total Available Water
	Water Quality	BOD in Water Bodies
		Concentration of Faecal Coliform in Freshwater
Biodiversity (15)	Ecosystem	Area of Selected Key Ecosystems
		Protected Area as a % of Total Area
	Species	Abundance of Selected Key Species
ECONOMIC		
Theme	Sub-theme	Indicator
Economic structure (2)	Economic Performance	GDP per Capita
		Investment Share in Gdp
	Trade	Balance of Trade in Goods and Services
	Financial Status (33)	Debt to GNP Ratio
		Total ODA Given or Received as a Percent of GNP
Consumption and Production Patterns (4)	Material Consumption	Intensity of Material Use
	Energy Use	Annual Energy Consumption per Capita

(cont.)

ECONOMIC		
Theme	Sub-theme	Indicator
	Waste Generation and Management (19–22)	Share of Consumption of Renewable Energy Resources
		Intensity of Energy Use
		Generation of Industrial and Municipal Solid Waste
		Generation of Hazardous Waste
		Management of Radioactive Waste
		Waste Recycling and Reuse
	Transportation	Distance Traveled per Capita by Mode of Transport

INSTITUTIONAL		
Theme	Sub-theme	Indicator
Institutional Framework (38, 39)	Strategic Implementation of SD (8)	National Sustainable Development Strategy
	International Cooperation	Implementation of Ratified Global Agreements
Institutional Capacity (37)	Information Access (40)	Number of Internet Subscribers per 1000 Inhabitants
	Communication Infrastructure (40)	Main Telephone Lines per 1000 Inhabitants
	Science and Technology (35)	Expenditure on Research and Development as a Percent of GDP
	Disaster Preparedness and Response	Economic and Human Loss Due to Natural Disasters

Note: Numbers in brackets indicate relevant Agenda 21 chapters.
Source: UN Division for Sustainable Development (UNDSD), *Indicators of Sustainable Development: Guidelines and Methodologies*, United Nations Publications, 2001. Retrieved August 2007, from
http://www.un.org/esa/sustdev/natlinfo/indicators/isdms2001/isd-ms2001isd.htm.

Appendix C: 15 Headline Indicators in the UK Sustainable Development Strategy (1999)

Indicator	No.	Specific targets and goals
Economic output (GDP)	H1	
Investment (as % of GDP)	H2	
Employment	H3	An increase in the proportion of working age people in employment, over the economic cycle, in the UK
Poverty and social exclusion	H4	Indicators of success in tackling poverty and social exclusion in the anti-poverty strategy
Education (qualification at age 19)	H5	85 per cent of 19 year olds in England to have a 'level 2' qualification by 2002; 75 per cent in Wales by 2002 and per cent in Northern Ireland by 2001
Health (expected years of healthy life)	H6	An increase in healthy life expectancy at age 65, in England
Housing (% of homes unfit)	H7	
Crime vehicle burglary violent	H8	30% reduction by March 2004 in England and Wales Reduce growth relative to its long-run rate in England and Wales
Climate change greenhouse gases carbon dioxide	H9	12.5% reduction 1990–2008/2012 for UK Goal: 20% reduction 1990–2010 for UK
Air quality Urban Rural	H10	National air quality objectives for individual pollutants, by 2005 for UK
Road traffic	H11	Reduce rate of growth, with an absolute reduction where environmental damage is greatest. Commission for Integrated; Transport has remit to advise on setting a target for England
River water quality	H12	At least half of river quality objectives (RQO) shortfall to eliminated by 2005 in England and Wales
Wildlife (bird population) all species woodland farmland	H13	Reverse the long-term decline in populations of woodland and farmland birds
Land use (% homes on previously developed land)	H14	60% by 2008 in England
Waste (arisings and management) household other	H15	Range of targets in draft waste strategies for England and Wales, Scotland and Northern Ireland

Source: DEFRA, Table 3.2 "Headline indicators – a baseline assessment", in *Quality of life counts (1999)*, UK Government, 1999, pp. 37. Retrieved Feb. 2009 from http://www.defra.gov. uk/sustainable/government/publications/uk-strategy99/index.htm.

Appendix D: 20 UK Sustainable Development Strategy Framework Indicators (2007)

1. Greenhouse gas emissions	
13. Resource use	
18. Waste	
20. Bird populations	Farmland
	Woodland
	Coastal
27. Fish stocks sustainability	
28. Ecological impacts of air pollution	Acidity
	Nitrogen
30. River quality	Biological
	Chemical
32. Economic growth	
37. Active community participation	
38. Crime	Vehicle and Burglary
	Robbery
40. Employment	
41. Workless households	
43. Childhood poverty	
45. Pensioner poverty	
47. Education attainment	
49. Health inequality	Infant mortality gap
	Life expectancy gap
55. Mobility	Walking/cycling
	Public transport use
59. Social justice	
60. Environmental equality	
68. Wellbeing	

Source: DEFRA, *Sustainable Development Indicators in Your Pocket 2007*, UK Government, Defra Publications, 2007, pp. 16–18. Retrieved Feb. 2009, from http://www.defra.gov.uk/sustainable/government/progress/data-resources/documents/sdiyp2007_a6.pdf.

Appendix E: 21 Key Indicators for Sustainable Development in Germany

Topic	Indicators	Objective
INTERGENERATION EQUITY		
1. Conservation of natural resources	Energy productivity	To double by 2020
	Raw materials productivity	To double by 2020
2. Climate protection	Reducing emissions of greenhouse gases	21% reduction by 2008/2010
3. Renewable energies	Percentages of total energy consumption accounted for by renewable energies	–4.2% of primary energy consumption and –12.5% of electricity consumption by 2010, rising to 20% of electricity consumption by 2020
4. Land use, conserving open spaces	Rising area of land used for human settlement and transport	Reduction in new land use to a maximum of 30 ha per day by 2020
5. Biodiversity	Populations of selected bird species as an indicator of biodiversity	Stabilization at a high level by 2015
6. National debt	State deficit	Consolidation of the national budget
7. Provision for future economic stability	Gross capital formation in relation to GDP	Increasing dynamism in innovation
8. Innovation	Private and public expenditure on research and development	Increase in R & D spending to 3% of GDP by 2010
9. Education and training	Training situation of 25 year-olds	Improve the proportion of the year group having completed a degree course by the age of 25 to 10 % by 2010 and 20 % by 2020; Percentage without leaving certificate from secondary school: 9.3% in 2010 and 4.6% in 2020
	University entrance rate	To rise to 40% by 2010
QUALITY OF LIFE		
10. Economic prosperity	Per capita gross domestic product	Economic growth
11. Mobility	Transport intensity for passenger and freight transport	Passenger transport: reduction to 90% of the 1999 level by 2010 and to 80% of this level by 2020; Freight transport: reduction to 98% of the 1999 level by 2010, and to 95% of this level by 2020

QUALITY OF LIFE		
Topic	Indicators	Objective
	Percentage of total transport output accounted for by rail and inland shipping	Percentage rail transport by 2015: 25% Percentage shipping by 2015: 14%
12. Nutrition	Nitrogen surplus in agriculture	80 kg/ha by 2010
	Rise in the proportion of agricultural land farmed organically	Proportion of agricultural land: 20% by 2020
13. Air quality	Air pollution	Reduction to 30% of the 1990 level
14. Health	Premature mortality (below the age of 65)	Drop
	Personal satisfaction with health (surveys)	To stabilize at a high level
15. Crime	Burglaries involving a break-in	Number of cases reported drops to 117,000
SOCIAL COHESION		
16. Employment	Employment rate	70% by 2010
17. Perspectives for families	Full-time day-care places in West Germany	Available for 30% of respective age groups
18. Equal opportunities	Average female wage as a percentage of average male wage	85% by 2015 (West German länder)
19. Integration of foreign citizens	Foreign school-leavers not gaining the first secondary school leaving certificate (Hauptschulsbschluss)	Numbers drop
INTERNATIONAL RESPONSIBILITY		
20. Development cooperation	Official development assistance (ODA)	Development cooperation as a percentage of GNP: 0.33% in 2006
21. Opening markets	EU imports from developing countries	Numbers rise

Source: German Federal Government, *Monitoring the 21 Indicators*, retrieved Feb. 2009, from http://www.bundesregierung.de/nn_208962/Content/EN/StatischeSeiten/Schwerpunkte/Nachhaltigkeit/nachhaltigkeit-2007-04-13-erfolgskontrolle_3A-die-21-indikatoren.html.

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Note – The letter "*n*" following the locators refer to notes