

ECONOMIC LOSS ASSESSMENT IN THE INDUSTRIAL SECTOR

Organized and chaired by
Hirokazu Tatano

Rapporteur: Muneta Yokomatsu

- ▶ **B.J. Bawagan/E.C. Torrente**
Assessing the Socio-Economic Impacts of Typhoon Haruruot, Cagayan Valley, July 2003. UNESCAP-NDCC Project
- ▶ **Yoshio Kajitani**
Economic Impacts on Industrial Sectors Caused by Lifeline System Failures
- ▶ **Satoshi Tsuchiya**
Economic Impact Assessment of an Earthquake: Lifeline Disruption and Its Recovery
- ▶ **Ozgur Ucer**
A Study on the Earthquake Risks Associated with the Automotive Industry in the Marmara Region
- ▶ **Hirokazu Tatano**
How to avoid double counting economic losses of disaster?

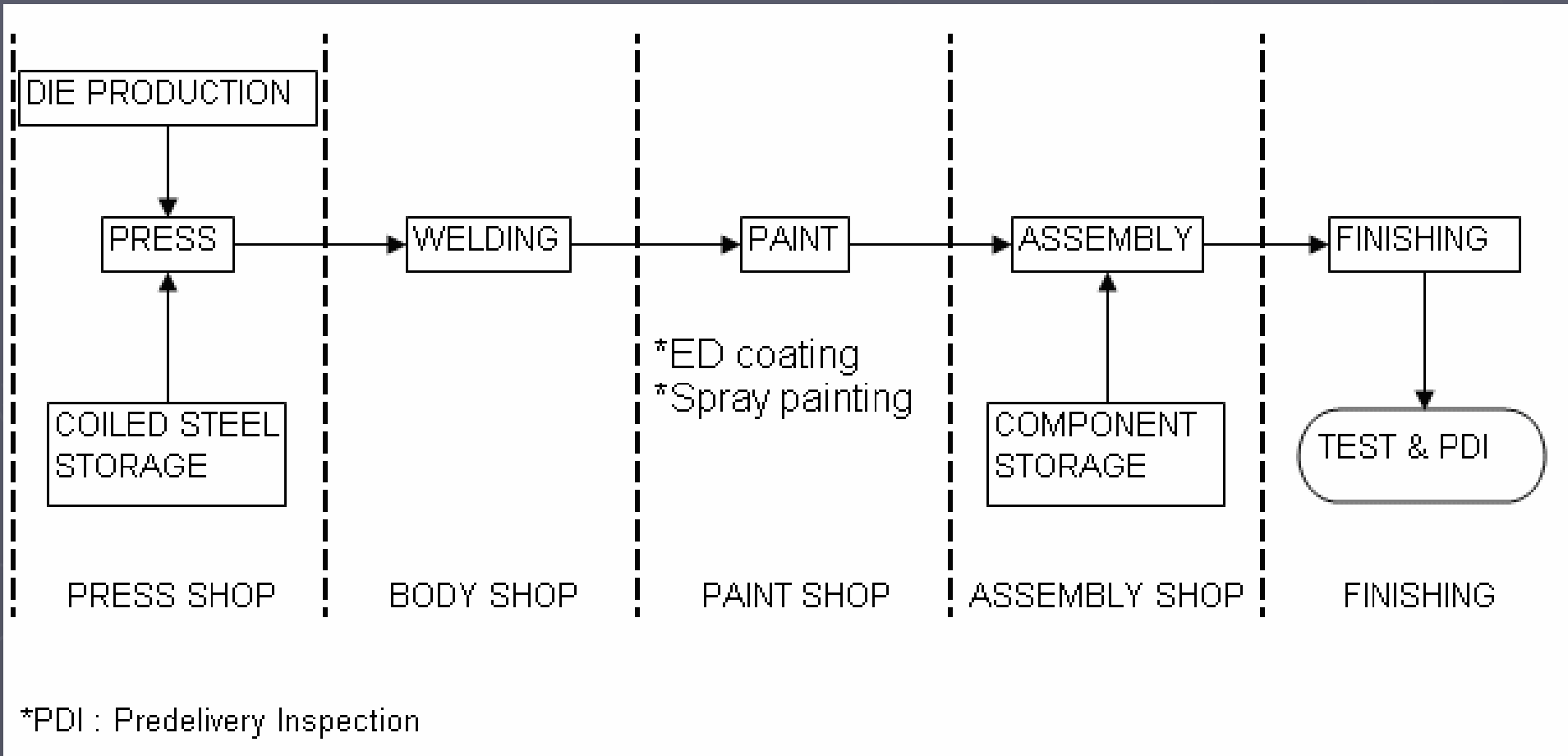
Questions

How should focuses and models are specified to evaluate vulnerability reflecting special properties in each industry and society?

What should be a adequate indicator for measuring economic losses?

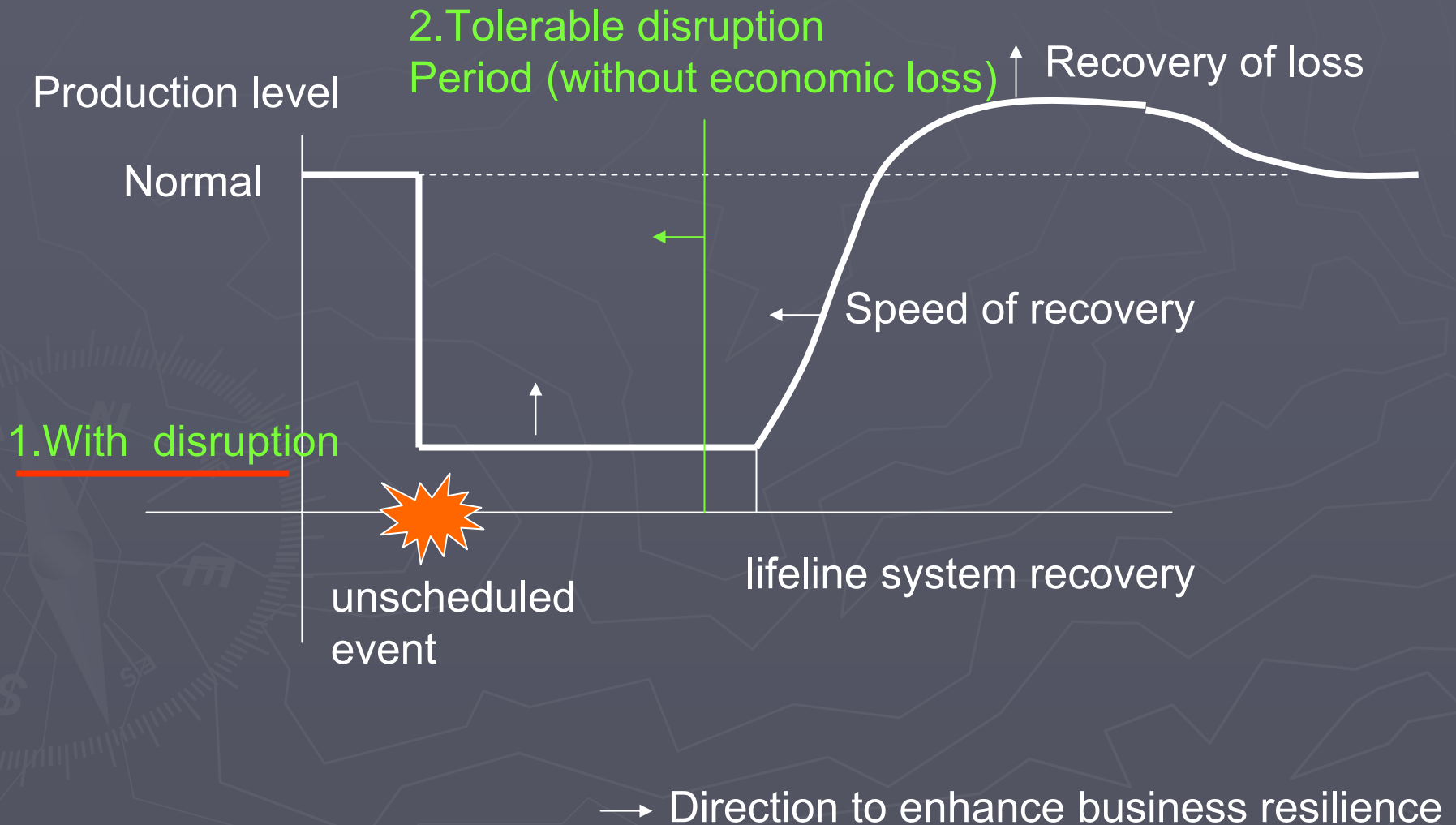
1. Inherent and indispensable factors

1) User's disjointing of the process in automotive industry



Evaluate damages in each stage

2) Kajitani's survey scheme on firms' recovery in Aichi-Shizuoka



3) Bawagan and Torrente's facilitator for estimating losses in the Philippines

The image shows a screenshot of a web browser window displaying the 'Disaster Impact Calculator' interface. The browser's menu bar includes 'File', 'Edit', 'View', 'Insert', 'Format', 'Tools', 'Data', 'Window', and 'Help'. In the top right corner of the browser window, there are buttons for 'Full Screen' and 'Close Full Screen'. The main content area features the following text:

Welcome to the

Disaster Impact Calculator

using the ECLAC Methodology

enter

At the bottom of the page, there is a blue banner with the United Nations logo on the left and the text 'United Nations Economic and Social Commission for Asia and the Pacific' in the center. To the right of the text is a photograph of four children smiling.

Other Fishing equipment	23	500,000.00
Others	23	500,000.00

Indirect losses

Growth stage of crop	Cost of input per growth stage per hectare			
	Variety 1	Variety 2	Variety 3	Variety 4
Paddy Rice				
Vegetative	9,815			
Reproductive	12,415			
Ripening	13,286			
Corn				
Vegetative	10,140	12,025		
Reproductive	11,115	13,000		
Ripening	11,635	13,520		

Paddy Rice	Variety	Growth stage of crop	Typhoon wind velocity (KpH)	Typhoon wind exposure (Hrs)	Flood water turbidity	Flood submergence (Days)	Crop lodging (Days)
Paddy Rice							
Rice 1	Variety 1	Vegetative	<70	≤12	Clear water	1-2	0
Rice 2	Variety 1	Vegetative	<70	≤12	Clear water	1-2	0
Rice 3	Variety 1	Reproductive	<70	≤12	Clear water	1-2	0
Rice 4	Variety 1	Ripening	<70	≤12	Clear water	1-2	0
Rice 5	Variety 1	Vegetative	<70	≤12	Clear water	1-2	0
Rice 6	Variety 1	Reproductive	70-100	>12	Muddy water	3-4	1-7
Rice 7	Variety 1	Ripening	101-150	>12	Muddy water	5-6	>7
Rice 8	Variety 1	Vegetative	<70	≤12	Clear water	1-2	0
Rice 9	Variety 1	Vegetative	<70	≤12	Clear water	1-2	0
Rice 10	Variety 1	Vegetative	>150	≤12	Clear water	≥7	0

Growth stage	Typhoon	Typhoon wind	Flood	Total Affected
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Losses of agricultural products are estimated in detail.

2. Initial standpoint of measuring

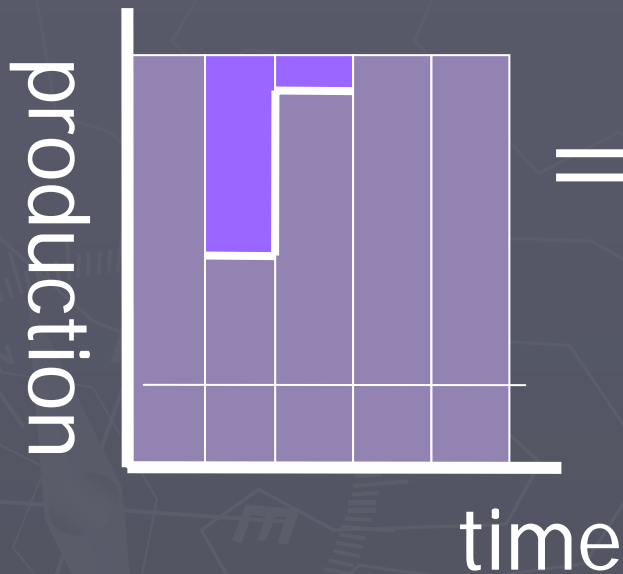
“Theory (with models) or reality?”

- To avoid “**Double Counting**”,
- To estimate **cascade** including responses of stakeholders in future, etc...

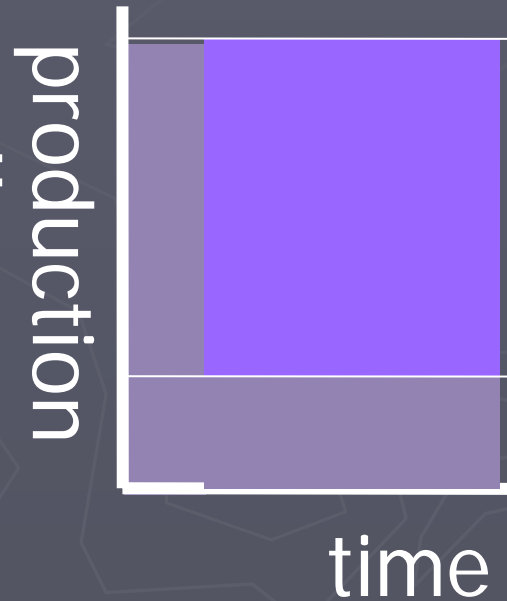
theoretical framework is necessary.

1) Tatano's equation of direct and indirect losses

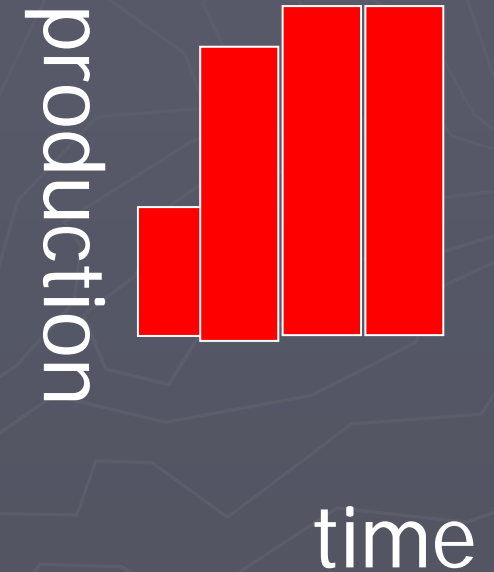
Indirect Loss



Direct Loss

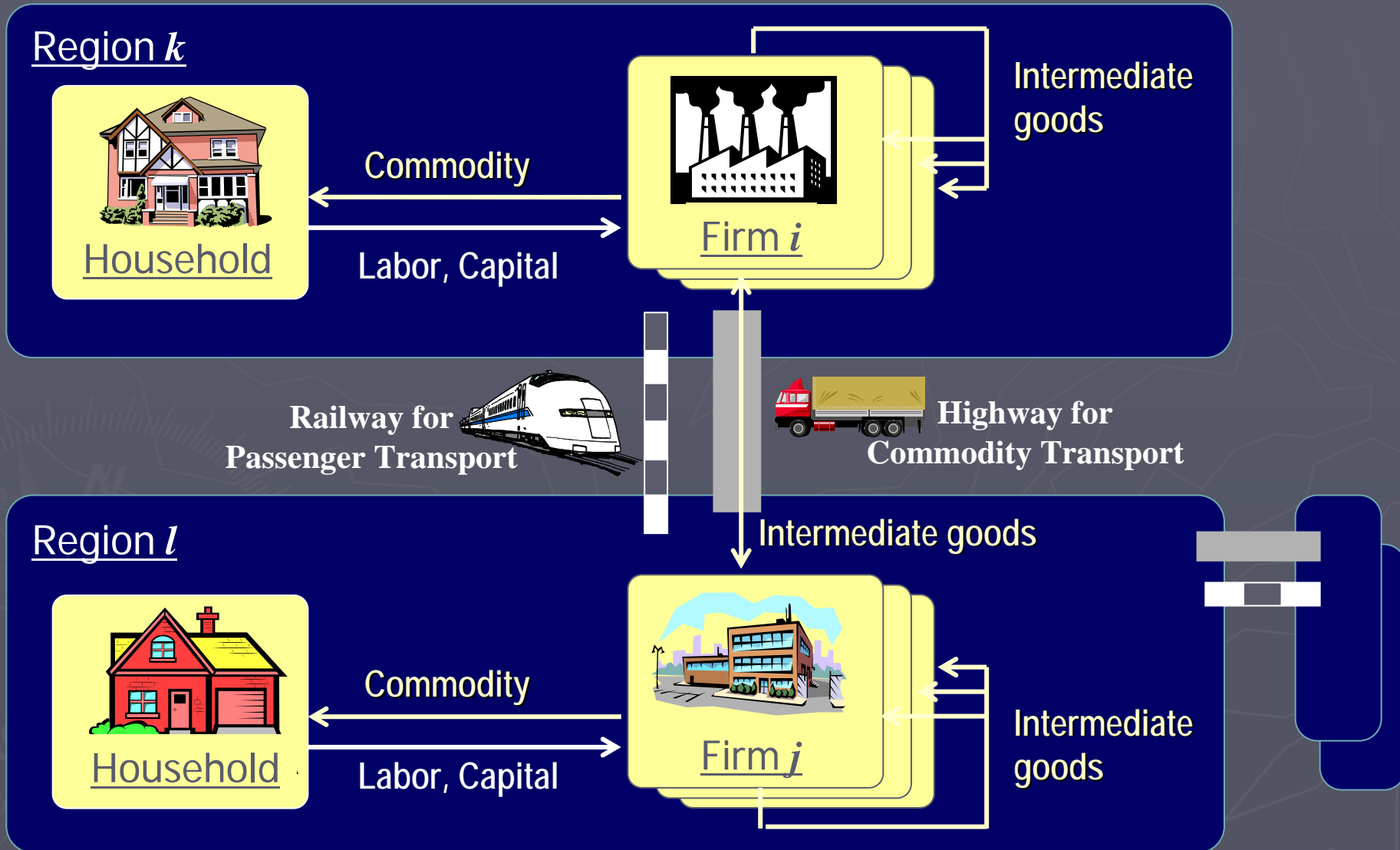


Benefit of Restoration



Aggregate estimation of stock losses and flow losses is possible.

2) Tsuchiya's CGE model on regional economic system



3. Consistency between models and real data

In imperfect market,

Economic value of capital
(present value of cash flow)

➔ Cost-benefit analysis

~~≡~~ Price in capital market

~~≡~~ Replacement cost

➔ Accounting
(recording with depreciation)

4. Data availability and models

I-O tables (regional interindustry relations tables)

Price data

➡ Cost-benefit analysis with CGE model

➡ Estimate parameters
of production technology

Reconstruction costs in current market

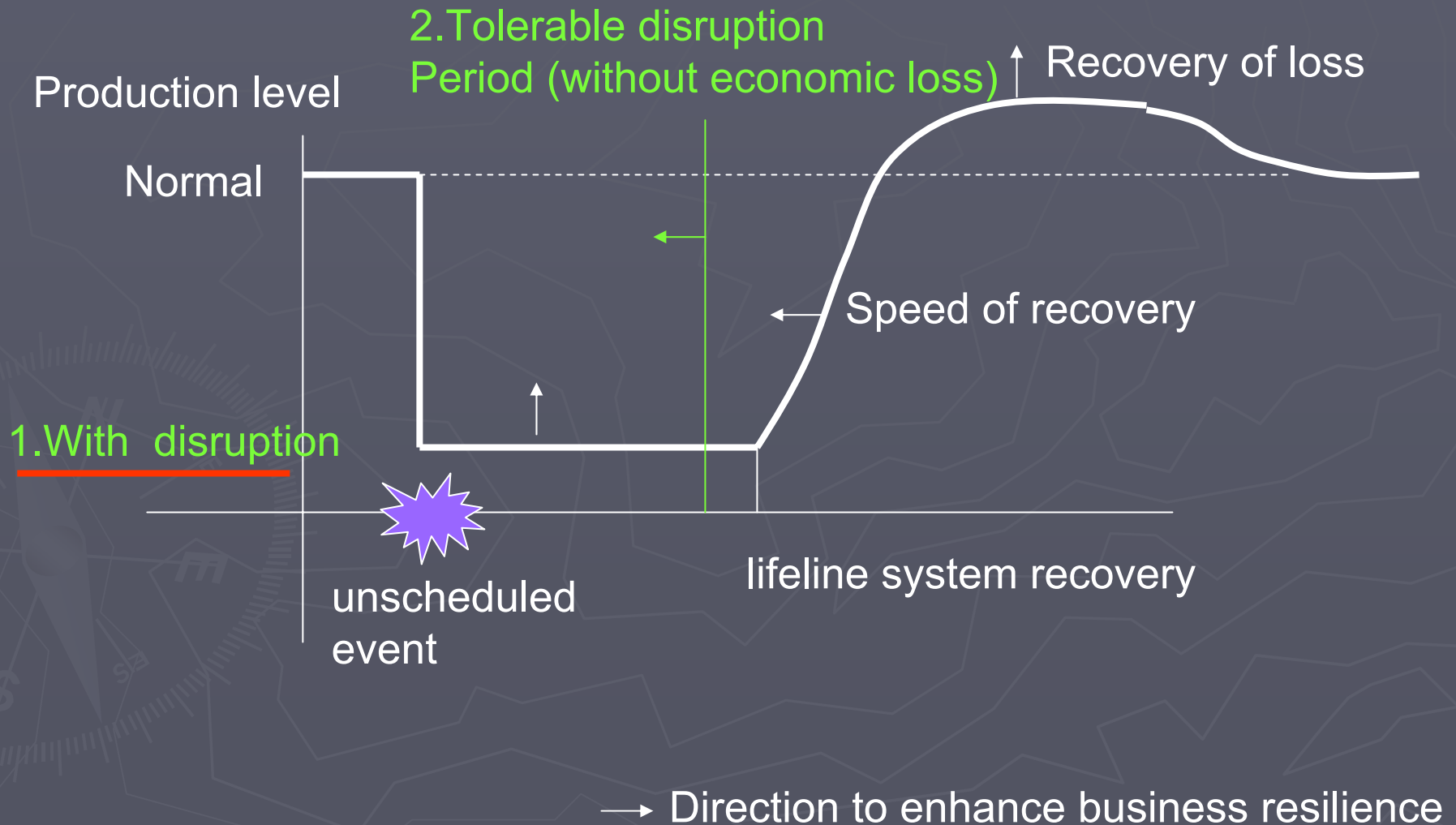
Some important data is often unavailable
such as

fragility curves of industrial
sectors,
resiliency factors, etc.

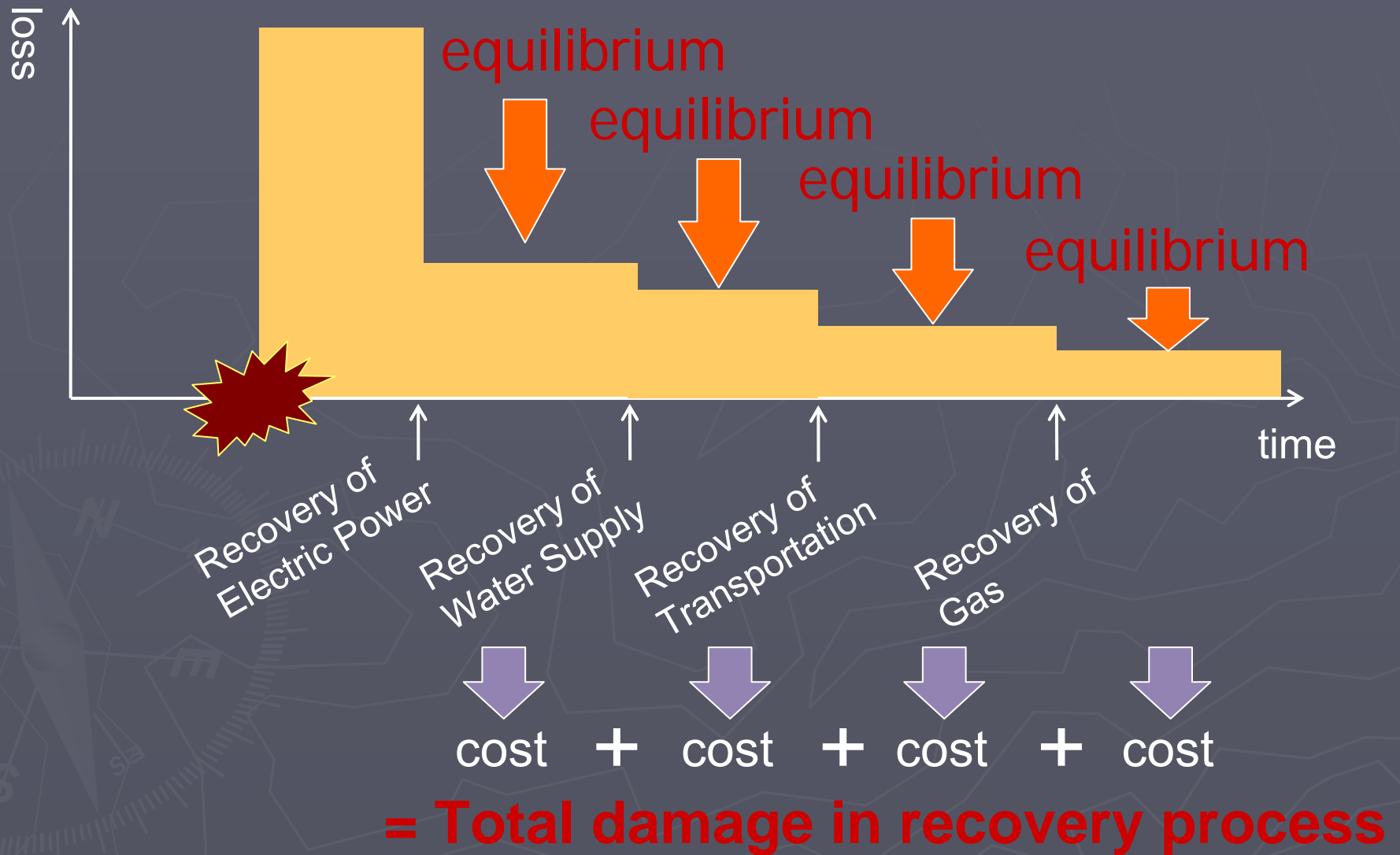
How and to what extent
we can complement
lack of necessary data
by individual survey and scenario making?

5. Description of recovery process

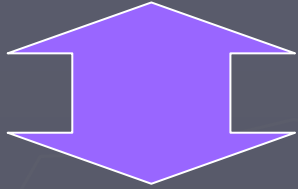
1) Kajitani's scheme on firms' recovery



2) Tsuchiya's Quasi-dynamic approach by CGE model



Advantage in aggregation of
cascade effects in society.



Recovery process is a dynamics of
convergence to the equilibrium.