

Economics of Information and Communication
Hajime Oniki

Information Technology for Sustainable Societies--
Public Policy Perspectives in Japan

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Hajime Oniki
Osaka-Gakuin University and Osaka University

oniki@iser.osaka-u.ac.jp
<http://www.crcast.osaka-u.ac.jp/oniki/>

Information Technology for Sustainable Societies-- Public Policy Perspectives in Japan

I. Roles of Information Technology for Sustainability

II. Complex Causal Relationships

III. Policies for Sustainability in Japan: the Case of
Telework/Telecommuting



I. Roles of Information Technology for Sustainability

- Direct technological effects
- Indirect contributions through changes in the behavior of individuals and organizations
- Promotion of the overall decision-making capability of a society

Direct technological effects

- air conditioners with information devices
- intelligent transport systems (ITS)

Indirect contributions through changes in the behavior of individuals and organizations

- telework/telecommuting (T/T)
- computerized bidding mechanism for trading emissions of CO₂

Promotion of the overall decision-making capability of a society

- improves the overall decision-making capability of a society
- Knowledge society is a prerequisite for sustainability.

II. Complex Causal Relationships

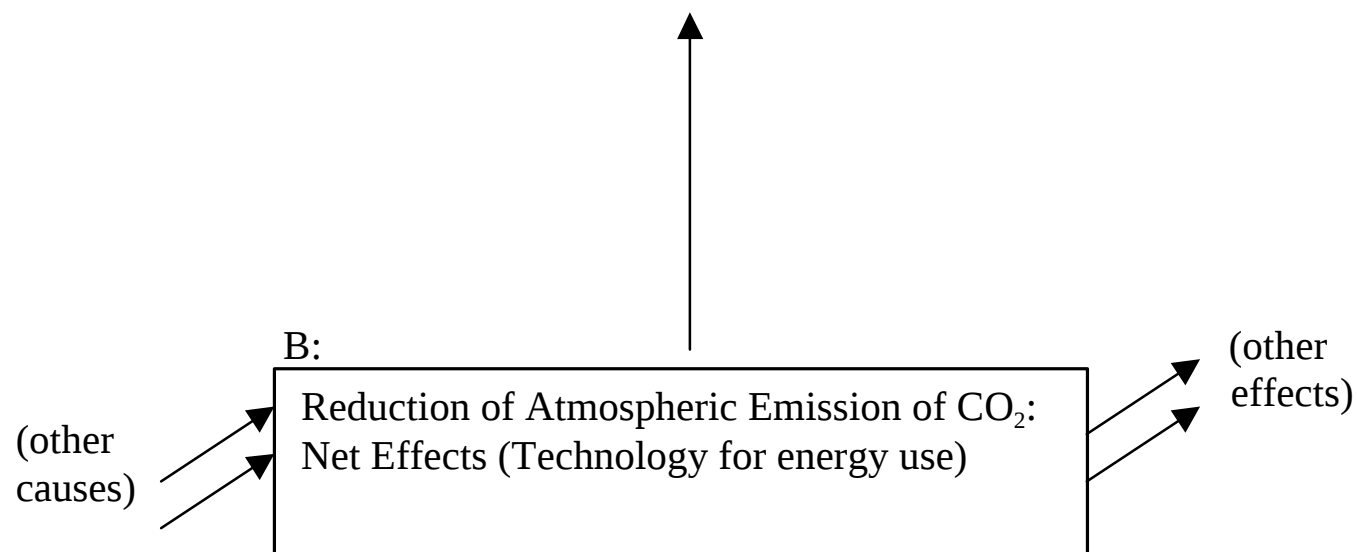
- Causes and Effects Involved in "Telework/Telecommuting"

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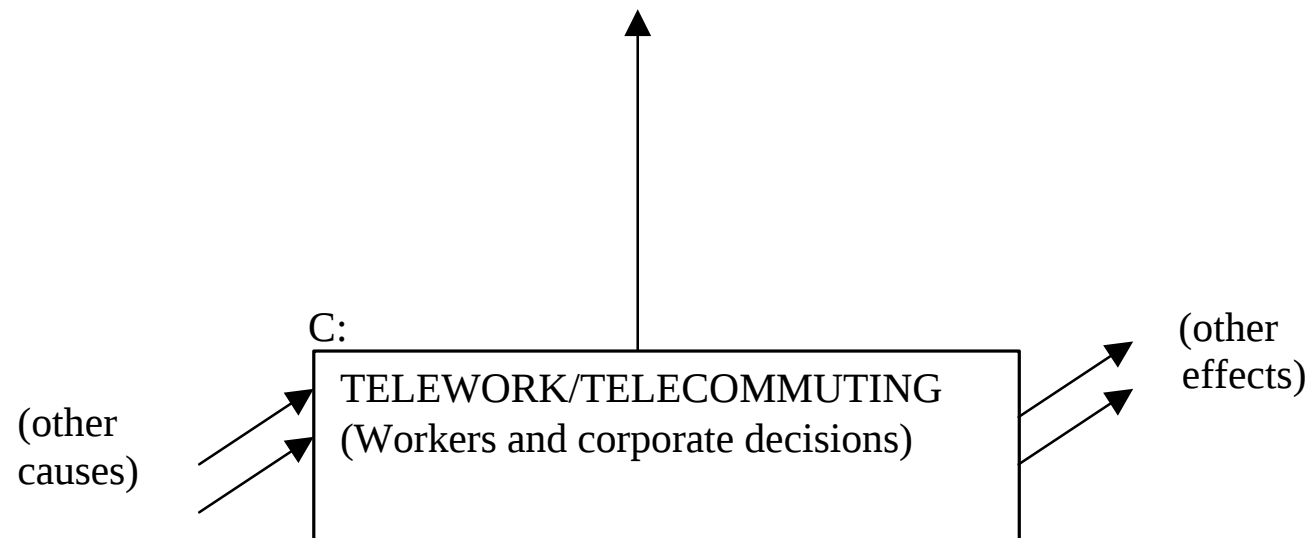
A:

Sustainability of
Global Society

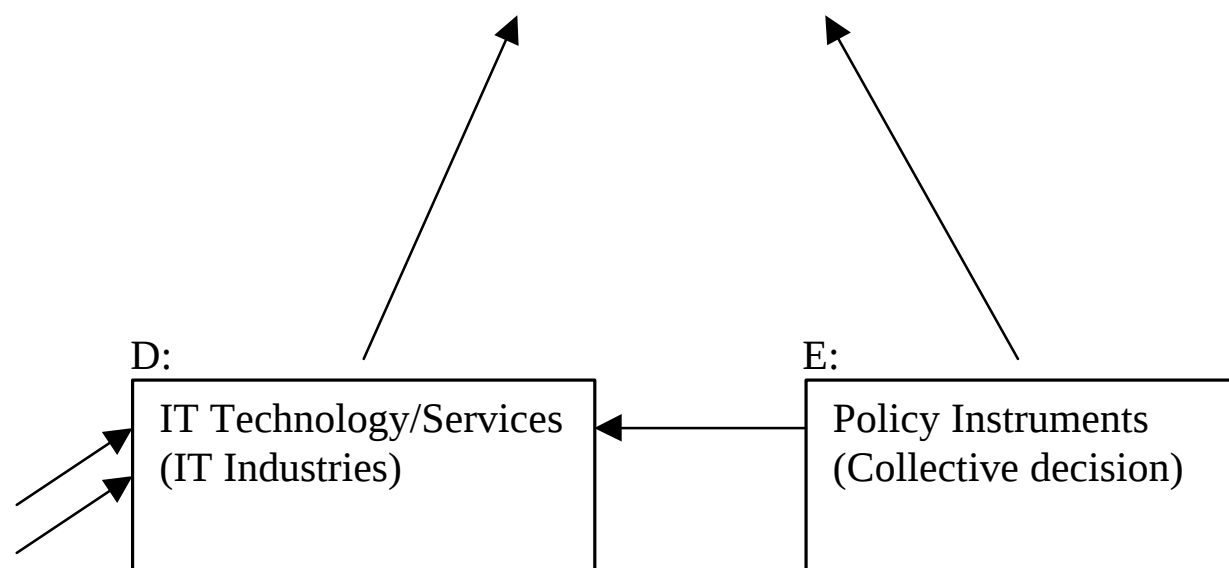
Causes and Effects Involved in "Telework/Telecommuting"



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Causes and Effects Involved in "Telework/Telecommuting"



III. Policies for Sustainability in Japan: the Case of Telework/Telecommuting

- The COP3 (a United Nations Climate Change Convention) in Kyoto, Japan, 1997
- Ministry of Posts and Telecommunications (MPT) Report, May 1998

The COP3 (a United Nations Climate Change Convention) in Kyoto, Japan, 1997

- Japan's target of decreasing 56.5 MTC (CO₂)
- T/T is projected to contribute by a decrease of 1.29 MTC (2.28% of the total projected decrease)

Ministry of Posts and Telecommunications (MPT) Report, May 1998

- Impacts of ICT on Sustainability: The Japanese case
- Projected Change in CO₂ Emission due to T/T in 2008: Japan
- Estimated T/T Participation in 2008: Japan

Impacts of ICT on Sustainability: The Japanese case

System	Net Reduction of CO ₂
1. Telework	1.29
2. ITS	1.10
3. Reduction of paper consumption by using LANs	0.72
4. Building management Systems	0.40
5. Electronic publishing and electronic newspapers	0.26
6. Distance learning, home education systems	0.04
Total reduction per year	3.81 (MTC)

(Source: MPT News, Vol. 8, No. 19, Dec 29, 1997)



Projected Change in CO₂ Emission due to T/T in 2008: Japan (by MPT) (1,000 tons of Carbon per Year)

Source of Change: T/T		Change in CO ₂ Emission		
		Decrease	Increase	Net Total
Telework at	Home	530	190	-390
	Satellite Offices	20	0	
	Spot Offices	30	0	
Video Meetings		940	40	-900
Total		1520	230	-1290

Estimated T/T Participation in 2008: Japan (Million Manyears)

Workers Occupation		Total Manhours		T/T Manhours		
			Composition (%)	Percent of T/T		Composition (%)
	Managers and Office Clerks	14.79	23.3	20	2.96	
	Professionals and Engineers	11.13	17.6	10	1.11	
	Sales, Transportation, and Communication	11.80	18.6	1	0.12	
	Others	25.66	40.5	0	0	
Total		63.38	100.0	6.6	4.19	100
T/T	Work at Home				1.47	35
	Work at Satellite Offices				0.63	15
	Work at Spot Offices				2.09	50

IV. Analysis of the Behavior on Telework/Telecommuting in Japan

- Estimated Number of Telecommuters in Japan
- Estimated Value of Telecommuting to Telecommuters and Non-telecommuters: Japan, Tokyo Metropolitan Area

By Mitomo, Hitoshi and Toshiya Jitsuzumi, "Impact of Telecommuting in Japan: Implications for Mass-Transit Congestion," 1998.

Estimated Number of Telecommuters in Japan (Thousand)

- A forecast of telecommuters in Japan
- The conservative scenario (of 3 scenarios)
- Percentage of telecommuters in the total workforce in 2005 is 9.16%

Estimated Value of Telecommuting to Telecommuters and Non-telecommuters: Japan, Tokyo Metropolitan Area (Yen per workday)

- The value of T/T for telecommuters
- The value for non-telecommuters
- In the metropolitan Tokyo area
- Positive externalities

Estimated Number of Telecommuters in Japan (Thousand)

Year	Scenario 1		Scenario 2		Scenario 3	
		(1)		(1)		(1)
1995	814	1.20	848	1.25	862	1.27
2000	2,943	4.24	2,934	4.23	2,931	4.22
2005	6,367	9.16	7,199	10.35	7,656	11.01
2010	8,490	12.47	11,290	16.58	13,400	19.68
2015	9,152	13.86	13,200	20.00	16,850	25.53
2020	9,421	14.52	13,970	21.54	18,370	28.31

Note (1): Percentage of telecommuters in the total workforce.

Estimated Value of Telecommuting to Telecommuters and Non-telecommuters: Japan, Tokyo Metropolitan Area (Yen per workday)

Area Average		Telecommuters		Non-telecommuters	
		Model 1	Model 1	Model 2	Model 2
	Scenario 1	197	253	29	77
	Scenario 2			37	99
	Scenario 3			44	115