

11 Appendix - Scenario Tables

	Scenario 1		Scenario 1 (population change)		Scenario 2 (offshore attack)		Scenario 2 (offsh + population)		Scenario 3 elec shift		Scenario 3 elec & pop 100 %	
Electricity												
Photovoltaic (PJ)	296		296		532		532		665		532	
Area (sqm/cap)		3,2		3,2		4,8		4,8		6,0		4,8
Efficiency		15%		15%		18%		18%		18%		18%
Peak power (MW)		60686		60686		10923 4		10923 4		15893 1		10923 4
Additional PV on facades (PJ)									333			
Additional facade- area (sqm/cap)										6,0		
Peak power (MW)										15893 1		
Solarthermal Plants (PJ)	0		0		0		0		616		380	
Area (sqkm)		0%		0%						600		370
Efficiency		0,2		0,2						20%		20%
Peak power (MW)												
Wind (PJ)	592		592		1624		1624		2902		2456	
Installation onsh/ offsh (factor of Scen 1)	1x	1x		1x	1	4	1	4	2,5x	4,5x	2	4,0
Efficiency		25%		25%						30%		30%
Number of onshore plants (units)		21933		21933		21933		21933		54833		32900
Installed power ons- hore (MW)		43725		43712		43725		43725		10931 2		65587
Average power ons- hore plants (MW)		2,0		2,0		2,0		2,0		2,0		2,0
Number of offshore plants (units)		5096		5096		20384		20384		22932		20384
Installed power off- shore (MW)		13192		13205		89632		89632		11466 0		10192 0
Average power off- shore plants (MW)		2,6		2,6		4,4		4,4		5,0		5,0
Geothermal Power Plants (PJ)	651	eta 40%	651	eta 40%	1124	eta 40%	1124	eta 40%	1336		1169	eta 40%
Used geothermal potential		25%		25%		35%		35%		40,0%		35%
Installed power (MWeI)		22901		22901		26718		26718		30535		26718
Full load hours		7000		7000		8100		8100		8100		8100
combine with ORC	eta 18%	yes	eta 18%	yes	eta 18%	yes	eta 18%		eta 20%	yes	eta 18%	yes
Water Power Plants (PJ)	452		452		452		452		452		452	
Biomass (PJ)	0			?	0		0		0		0	

	Scenario 1		Scenario 1 (population change)		Scenario 2 (offshore attack)		Scenario 2 (offsh + population)		Scenario 3 elec shift		Scenario 3 elec & pop 100%	
Fast reacting power plants (PJ)	5		5		5		5		5		5	
Cogeneration in households (PJ)	139		139		139		139		139		139	
Cogeneration in industry (PJ)	437		437		437		437		437		437	
total electricity	2572		2572		4313		4313		6885		5570	
storage loss	7		7		7		7		7		7	
electricity surplus	464	0,8	892	0,8	2202	0,8	2633	0,8	4777	0,85	3896	0,85
hydrogen production	371		714		1761		2107		3096		2854	
							remaining surplus:		1134		538	
Heat												
Additional solarthermal heat production in industry (PJ)	0		0		342		342		683		342	
installation increased by (factor)			0,0		1,0		1,0		2,0		1,0	
additional area (sqkm)			0		257		257		514		257	
Cogeneration in households (PJ)	232		232		232		232		232		232	
Cogeneration in industry (PJ)	728		728		728		728		728		728	
Solarthermal collectors (PJ)	1789		1789		1789		1789		1789		1789	
total heat	2749		2749		3091		3091		3432		3091	
storage loss	292		232		292		232		292		232	
heat surplus	-1746		-823		-1405		-481		-42		4	
							remaining electrical surplus gives heat (at eta 90%):		1021		485	
Fuels												
fuel production (electricity)	371		714		1761		2107		3096		2854	
fuel consumption (cogeneration)	1920		1920		1920		1920		1920		1920	
fuel consumption (heating plants)	1984		935		1597		547		48		-4	
total fuels demand	4709		3075		2932		1294		48		-4	
Energy Supply												
total supply [PJ]	5.321		5.321		7.403		7.403		10.317		8.661	
thereof domestic fuel production	371		714		1.761		2.107		3.096		2.854	
resulting hydrogen import	4.709		3.075		2.932		1.294		48		-4	
percentage covered	53%		63%		72%		85%		100%		100%	
percentage covered (system gross supply / energy demand)	71%		89%		99%		124%		138%		146%	

	Scenario 1		Scenario 1 (population change)		Scenario 2 (offshore attack)		Scenario 2 (offsh + population)		Scenario 3 elec shift		Scenario 3 elec & pop 100%	
Fuel imports	Scenario 1		Scenario 1 (population change)		Scenario 2' (offshore attack)		Scenario 2' (offsh + population)		Scenario 3'' elec shift		Scenario 3'' elec & pop	
regional produced hydrogen (PJ)	371		714		1761		2107		3096		2854	
hydrogen import (PJ)	4709		3075		2932		1294		48		-4	
Import share (Rela- ted to the supply of 1999)	20,5%		13,4%		12,8%		5,6%		0,2%		0,0%	

Source: ERJ.

Table 26 : Supply overview of the different „Energy Rich Japan“ - ERJ Scenarios