

# Feed-in Tariff Reform in the Photovoltaic Sector at a Post-Fukushima Era: The Dilemma of Multi Goals of Developing PV

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# OVERVIEW

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- ☐ FEED-IN TARIFF (FIT)
- ☐ EUROPEAN EXPERIENCE
- ☐ THE CASE FOR REFORM
- ☐ REFORM OF DESIGN ELEMENTS (ELIGIBILITY/  
DURATION/ RATE SCHEDULE/ CAPS/ LOADING  
HOURS)
- ☐ CONCLUSIONS
- ☐ ACKNOWLEDGEMENTS

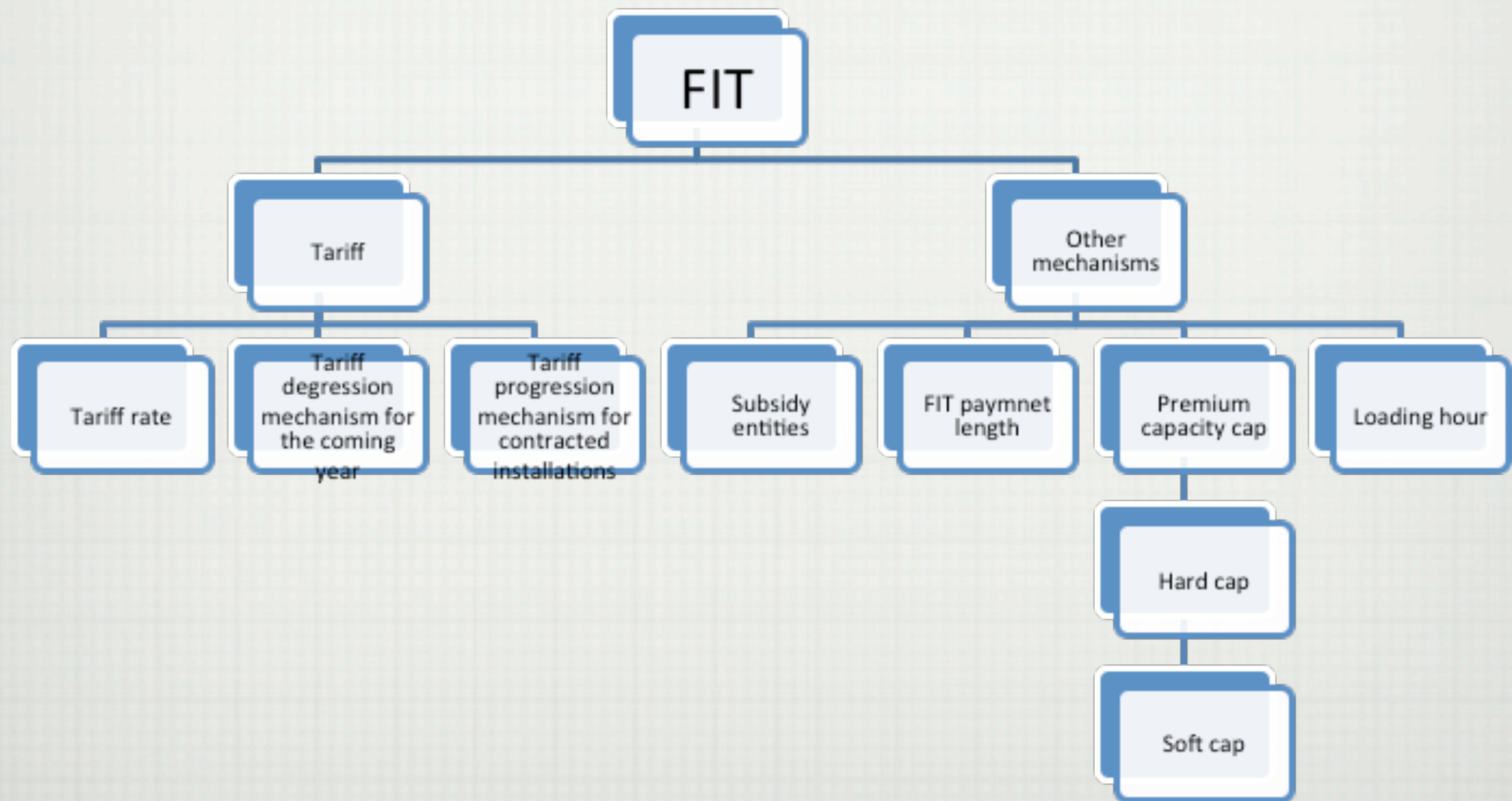


# FEED-IN TARIFF (FIT)

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- ☐ MECHANISM TO ADVANCE RENEWABLE ENERGY PROJECT INSTALLATIONS
- ☐ PERFORMANCE-BASED & COST-BASED MECHANISM
- ☐ GRID ACCESS - LONG-TERM CONTRACTS
- ☐ FAVOURABLE PURCHASE PRICE
- ☐ ECONOMIES OF SCALE

# FEED-IN TARIFF (FIT)





# EUROPEAN EXPERIENCE

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- ☐ WORLD LEADERS (ANNUAL TURNOVER €36 BILLION)
- ☐ 13.4 GW (2010); 21.9 GW (2011) [GRID CONNECTED]
- ☐ 2005 - 2011: 51.36 GW (SOLAR PV)
- ☐ GERMANY - ITALY - SPAIN - FRANCE - UK
- ☐ DIFFERENT REFORM POLICIES; DIFFERENT PHASES

Country	Solar PV
Germany	€0.43 / kW (2009)
Italy	€0.40 / kW (2008)
Spain	€0.44 (2006)
France	€0.45 / kW (2009)
UK	£0.36 / kW (2010)

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TEXT



# YEAR-ON-YEAR INSTALLED CAPACITY (MW)

Country	2006	2007	2008	2009	2010	2011
Germany	3063	3846	6019	9969	17370	24875
Italy	58	120	458	1157	3478	12764
Spain	118	733	3421	3438	3808	4214.2
France	33	47	104	335	1054	2831.4
UK	14	19	23	30	75	1014

REFERENCE: EPIA

# THE CASE FOR REFORM

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- ☐ SOLAR-LED DASH
- ☐ EXCESS GROWTH / TARGETS REACHED EARLY
- ☐ UNSUSTAINABLE
- ☐ FINANCIAL STRAIN
- ☐ UNPREPARED
- ☐ PHASES OF REFORM



# REFORM OF DESIGN ELEMENTS

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- ☐ ELIGIBILITY
- ☐ FIT PAYMENT DURATION
- ☐ TARIFF SCHEME (RATE SCHEDULE; DEGRESSION)
- ☐ CAPS
- ☐ LOADING HOURS

# ELIGIBILITY

Country	Pre-Boom	Post-Boom
Germany	< 5MW	unchanged
Italy	1 kW - 1 MW	1 MW reinstated
Spain	50 MW - 100 MW	2 MW
France	12 MW	< 100 kW
UK	< 5MW	> 50 kW



# SUMMARY

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- ☐ CAPS WERE IMPOSED ON ROOFTOP PROJECTS (SPAIN; FRANCE)
- ☐ TECHNICAL STANDARDS (GERMANY; ITALY)
- ☐ RESTRICT GROUND-MOUNTED INSTALLATIONS (GERMANY GRADUALLY ABOLISHED FIT; ITALY & FRANCE RIGID CRITERIA)
- ☐ ADOPT TENDERING SCHEME (FRANCE)

# FIT PAYMENT DURATION

Country	Pre-Boom	Post-boom
Germany	20 yrs	20 yrs
Italy	20 yrs	20 yrs
Spain	25 - 30 yrs	25 - 30 yrs
France	20 yrs	20 yrs
UK	20 yrs	20 yrs



# SUMMARY

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- ☐ REVISING THE TIMEFRAME HAS NO REAL EFFECT
- ☐ INVESTOR / PARTICIPANT UPROAR - SPAIN

# TARIFF SCHEME (€/KW)

country	2004	2005	2007	2008	2009	2010	2011
Germany	0.574	0.545	————	0.437	0.430	0.391	0.287
Italy	————	0.46	0.42	————	————	————	0.40 - 0.38
Spain	0.414	0.421	0.44	0.44 - 0.22	————	————	————
France	————	————	————	0.3119	————	0.58 - 0.37	0.42 - 0.276
UK	————	————	————	————	————	(£)0.36	(£)0.37



# TARIFF SCHEME - DEGRESSION

Country	Degression
Germany	Annual: 5% YOY
	Dynamic: 1 - 21 %
Italy	2% - 5% - very complicated
Spain	Annual: complex
	Dynamic: 5 - 45 %
France	Annual: 10% YOY
	Dynamic: 0% - 10%
UK	Annual: 8% - 9%; 40% - 70%; fixed annual degression

# SUMMARY

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- ☐ CUTTING TARIFF RATE IS BEST
- ☐ REMOVE CPI-LINKED TARIFF
- ☐ INCREASE DEGRESSION RATE
- ☐ EFFECTIVE WAY TO DEAL WITH PV BOOM



# CAPS

Country	Pre-Boom	Post-Boom
Germany	Hard cap - 350 MW	soft cap (multi-levels)
Italy	Referential target	Hard cap-soft cap
Spain	No hard caps	Seasonal cap
France	Hard cap - 500 MW	Hard cap-soft cap
UK	No caps	No caps

# SUMMARY

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- ☐ BLUNT INSTRUMENT
- ☐ NOT POSITIVE FOR INVESTMENT ENVIRONMENT
- ☐ HARD CAPS - ACTION OF LAST RESORT
- ☐ MULTIPLE ROUNDS OF PV BOOM (ITALY; FRANCE)
- ☐ MIXED CAP SYSTEM PREFERABLE



# LOADING HOURS

Country	Pre-Boom	Post-Boom
Germany	w/a	w/a
Italy	w/a	w/a
Spain	w/a	1,250 - 1,707 hrs
France	1200 / 1500 hrs	1500 / 1800 hrs
UK	w/a	w/a

# SUMMARY

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- ☐ INSTALLATION LOCATION IS IMPORTANT
- ☐ QUALITY OF SOLAR RESOURCE IS IMPORTANT
- ☐ NEED TO INCLUDE THESE FACTORS
- ☐ ACCOUNTS FOR DECENT (AND SUITABLE) PROFIT FOR DEVELOPERS
- ☐ MIGHT HELP TO BALANCE DEVELOPMENT
- ☐ AVOID PV BOOM



# CONCLUSIONS

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- ☐ HARD CAP LEAST PREFERRED
- ☐ RESTRICT LARGE-SCALE GROUND-MOUNTED PV
- ☐ RAISING TARIFF DEGRESSION RATE
- ☐ RATIONALISE RESOURCE QUALITY
- ☐ CUT THE RATE - MOST EFFECTIVE
- ☐ ATTRACTIVE RATE, NOT GENEROUS RATE

# ACKNOWLEDGEMENTS

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- ☐ GAO RESEARCH GROUP
- ☐ INSTITUTE OF LAW FOR SCIENCE & TECHNOLOGY (ILST)
- ☐ NATIONAL TSING HUA UNIVERSITY (TAIWAN)
- ☐ PROMITHEAS / KEPA
- ☐ ALL OF YOU!