Going to smart regulation for smart grids?

Contribution based on study "smart regulation for smart grids"
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+ a new study undertaken with Matteo Di Castuelnuovo

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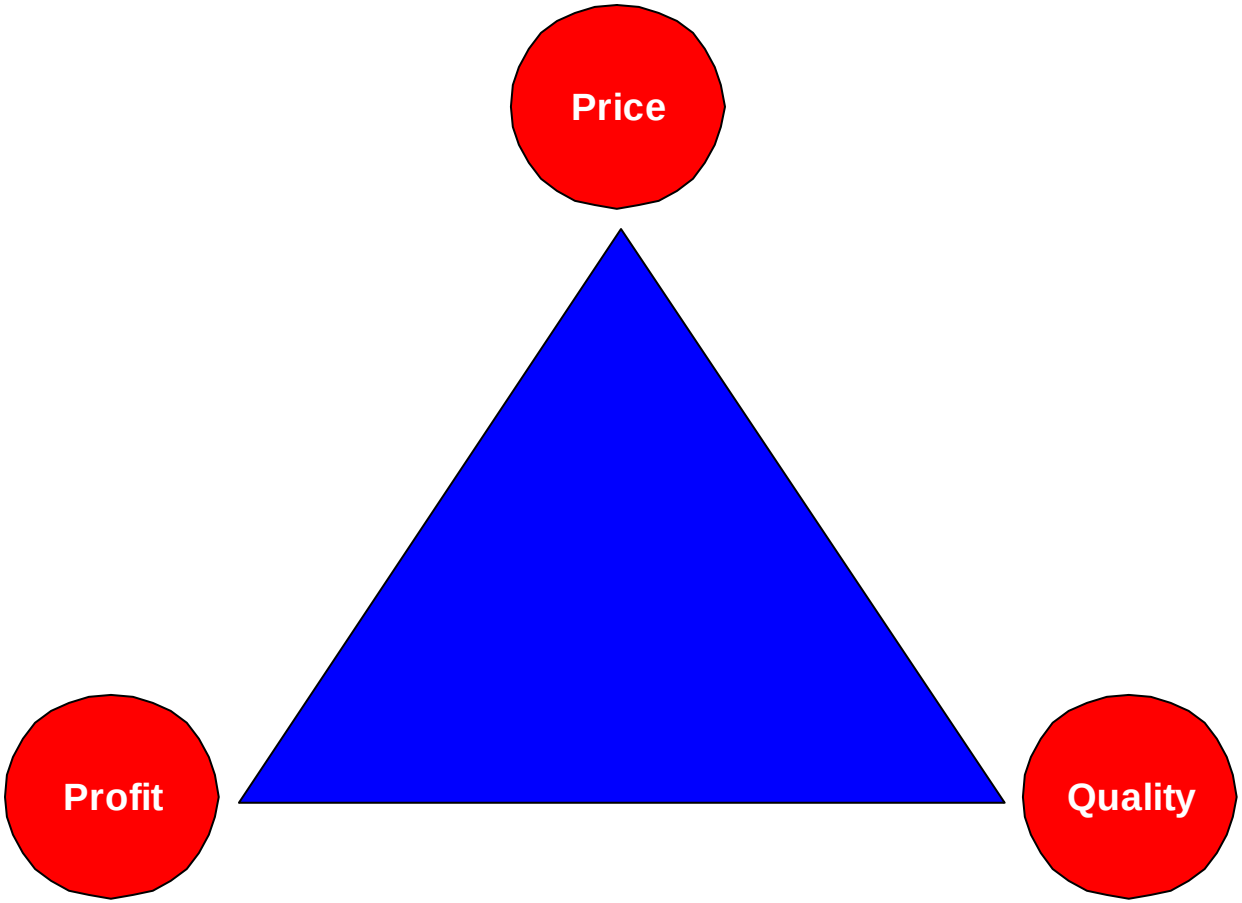
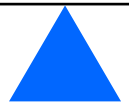
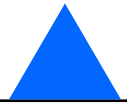
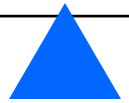
[I] Introduction: Regulatory Objectives Yesterday



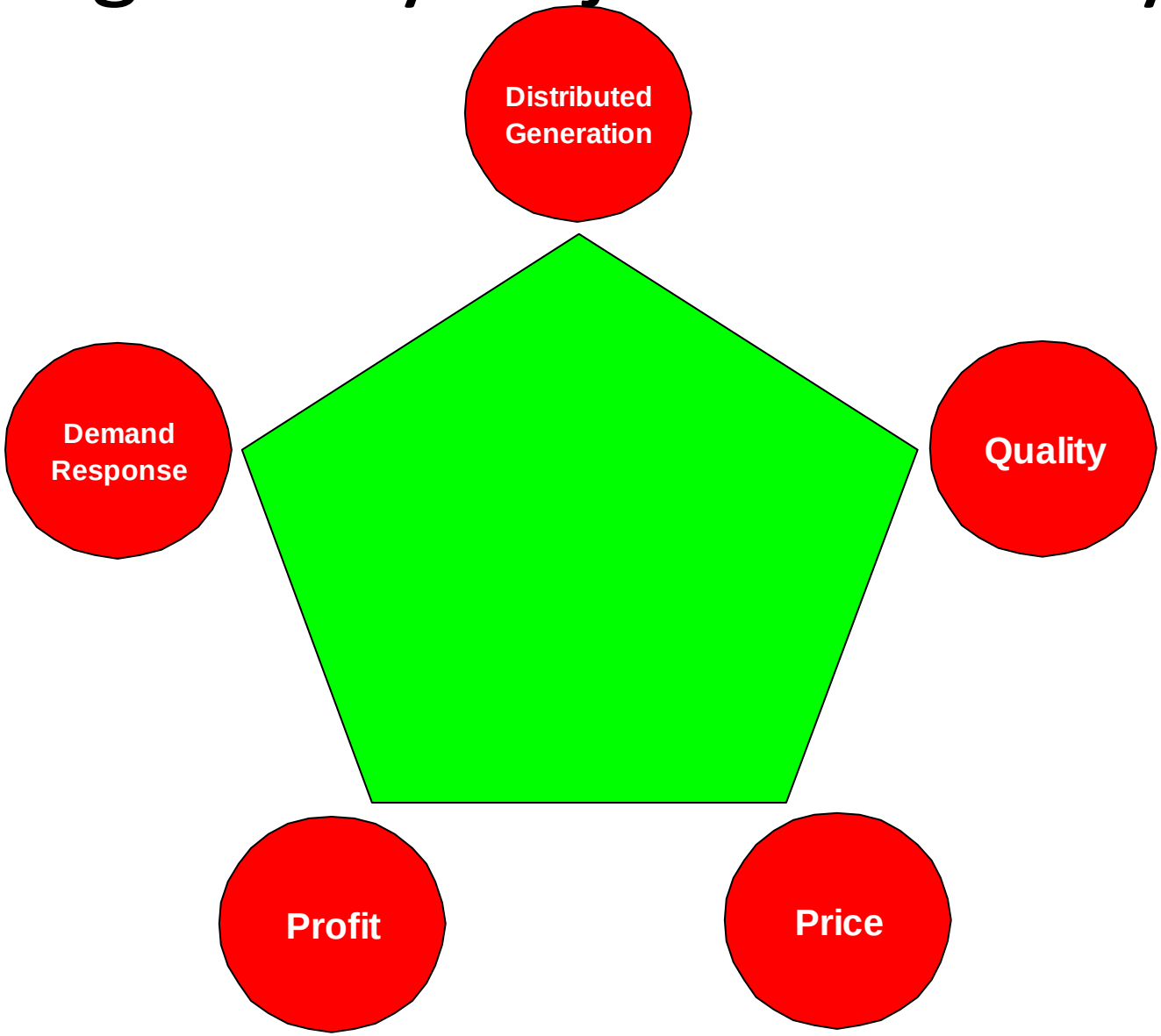
Regulatory Objectives Yesterday

	INPUT REGULATION			OUTPUT REGULATION
Objectives	**RoR**	**Price Cap**	**Yardstick**	
Prices				
Profits				
Quality of Supply				

Electricity Distribution
A Quick "Health Check"

Aims of incentive regulation	Did it work with DSOs?
Reduce costs	YES
Guarantee quality of supply	YES
Stimulate research	NO
Stimulate efficiency investments	Likely?

Regulatory Objectives Today



Key messages

1. Being smart is not enough
   - Grids (and regulation) should enable the achievement of decarbonization challenges (DG, demand and large scale RES)
2. Adaptation of regulation needed at three levels
   - Grids services, grid technology innovation and user participation to the ongoing grid innovation
3. Ingredients of a smart regulation for smart grids
   - Grid services: output regulation, unbundling,
   - Innovation : Specific and output oriented innovation mechanisms / monitoring standard needs
   - User participation: sound tariff, support schemes

1. Being smart is not enough

Integration of	Smart solutions		
Distributed Generation	Active distribution grid operation	Flexibility in connection and access, proactive planning	Participate in pro-active planning and grid operation
Demand and storage	Metering and communication infrastructure	Information services	Save energy and peak energy
Large-scale RES	Off-shore grids	Cooperation among TSOs, flexibility in connection and access, proactive planning	Participate in pro-active planning and grid operation

2. Adapt regulation at three levels

Integration of	Grid technology innovation	Grid services	Grid user participation
Distributed Generation	Active distribution grid operation	Flexibility in connection and access, proactive planning	Participate in pro-active planning and grid operation
Demand and storage	Metering and communication infrastructure	Information services	Save energy and peak energy
Large-scale RES	Off-shore grids	Cooperation among TSOs, flexibility in connection and access, proactive planning	Participate in pro-active planning and grid operation

3. Smart regulation for smart grids

In the current regulatory frameworks, what are the incentives of grid companies	If grid companies would do what is expected, what does it imply for them	Smart regulation is then about aligning the incentives with the expectations

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3. Smart regulation for smart grids

*Applied to **grid services***

In the current regulatory frameworks, what are the incentives of grid companies	**If grid companies would do what is expected, what does it imply for them**	**Smart regulation is then about aligning the incentives with the expectations**
Cut costs and improve quality of supply	Operational cost increases as costs of maintaining quality of supply	Correcting the distortion of incentives in the existing regulatory frameworks e.g. define, measure, reward new services
Revenue depends on distributed energy	Less energy distributed with DG and demand response integration	
Often lack of incentives to do better than what is minimally required	Do more than what is minimally required	Potential for output regulation: e.g. rewards for DG capacity connected

3. Smart regulation for smart grids

*Applied to **grid technology innovation***

In the current regulatory frameworks, what are the incentives of grid companies	**If grid companies would do what is expected, what does it imply for them**	**Smart regulation is then about aligning the incentives with the expectations**
Cut costs, including innovation costs	Long term benefits with shorter term costs	Output regulation grid services can be a "market pull" for mature technologies Design specific regulatory measures for grid technology innovation
	Distributed benefits (leakage)	
	Interoperability (enlarging leakage)	Standards

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3. Smart regulation for smart grids

*Applied to **user participation to the ongoing grid innovation***

In the current regulatory frameworks, what are the incentives of grid companies	**If grid companies would do what is expected, what does it imply for them**	**Smart regulation is then about aligning the incentives with the expectations**
Cost efficient consumption of grid services	Grid regulation, e.g. charging for grid services	Potential for output regulation on grid companies
Regulations external to grid regulation, e.g. RES support schemes bypass Grid incentives' schemes	Participate in the ongoing grid innovation, definition of new services, coordination with grid companies, etc	Revisiting regulations affecting grid users' participation and being external to grid regulation?

Conclusions

1- New services have to be defined and measured (even using proxies, etc)
  - Innovation is not the target in itself
  - Grid users should participate to this definition as they are not willing to pay for services they do not value or did not ask for

2- Support of (risky) technology innovation also needs to be conceived, while separately
  - Notably: public money too should contribute to ensure the electrical and GHG system transformation process
  - Strong governance (as investment planning process) to ensure the transition from R&D to value for money grid services

3- Regulatory frame has to open “experimental areas”
  - Test and pilots necessary to accumulate experience and to manage a typical “trial and error” learning process