sweet swiss energy research for the energy transition

PATHFNDR

Market + policy

Are policies shifting from solely promoting electrification to meeting demand-side flexibility needs?

Work package 7

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1 INTRODUCTION

With higher penetration levels of both intermittent renewables in the electricity supply and sector coupling loads on the demand side, demand-side flexibility needs are expected to increase [1]. The policy challenge is therefore two-fold: policies need to support the diffusion of new demand-side technologies, *and* they need to incentivise these technologies to be used flexibly (Figure 1). Importantly, policies should address existing barriers to demand-side flexibility [2].

In this work, we examine how different countries address both challenges. Furthermore, we track whether and how the focus of electrification policymaking has shifted over time, from promoting "simple" electrification, to also addressing systemic and promoting "flexible" electrification.

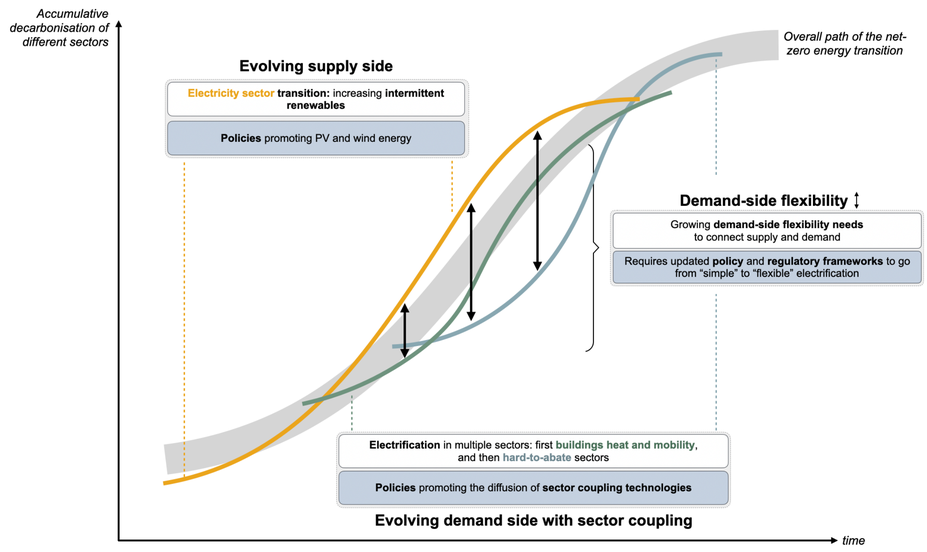

Figure 1: Necessary coordination of demand-side flexibility policies with evolving supply and demand of electricity

2 METHODS

We review electrification policies in six jurisdictions (Switzerland, its neighbours and the EU) and four key sector coupling technologies (electric vehicles, heat pumps, electrolysers and new industrial loads). We collect policies through a directed review in search engines, legal databases, national energy strategies, existing literature and legal documents of energy regulators. For each policy, we classify the objective *diffusion* or *flexibility* and keep track of the phase-in and phase-out year.

3 RESULTS

The results of this study can be summarised into three key messages:

- Technology diffusion policies are rather consistent across jurisdictions assessed but uneven across technologies. Policy frameworks for electric vehicles and heat pumps are more mature and their deployment has started. On the other hand, roadmaps and strategies for electrolysers and industrial electrification have been enacted only after 2020, if at all.

- Although in easy-to-abate sectors (transport and residential heating) electrification policies did not account for flexibility initially and came after the start of their diffusion, this is increasingly being corrected and flexibility needs are even anticipated for the diffusion of assets in harder-to-abate sectors (Figure 2).

- Regulations for demand-side flexibility are improving over time (Figure 3), although barriers remain and persist unevenly across countries. Flexibility markets are opening at both local and national scale. More advanced electricity tariffs (time-of-use, real-time pricing and direct load control) are also being permitted by regulators.

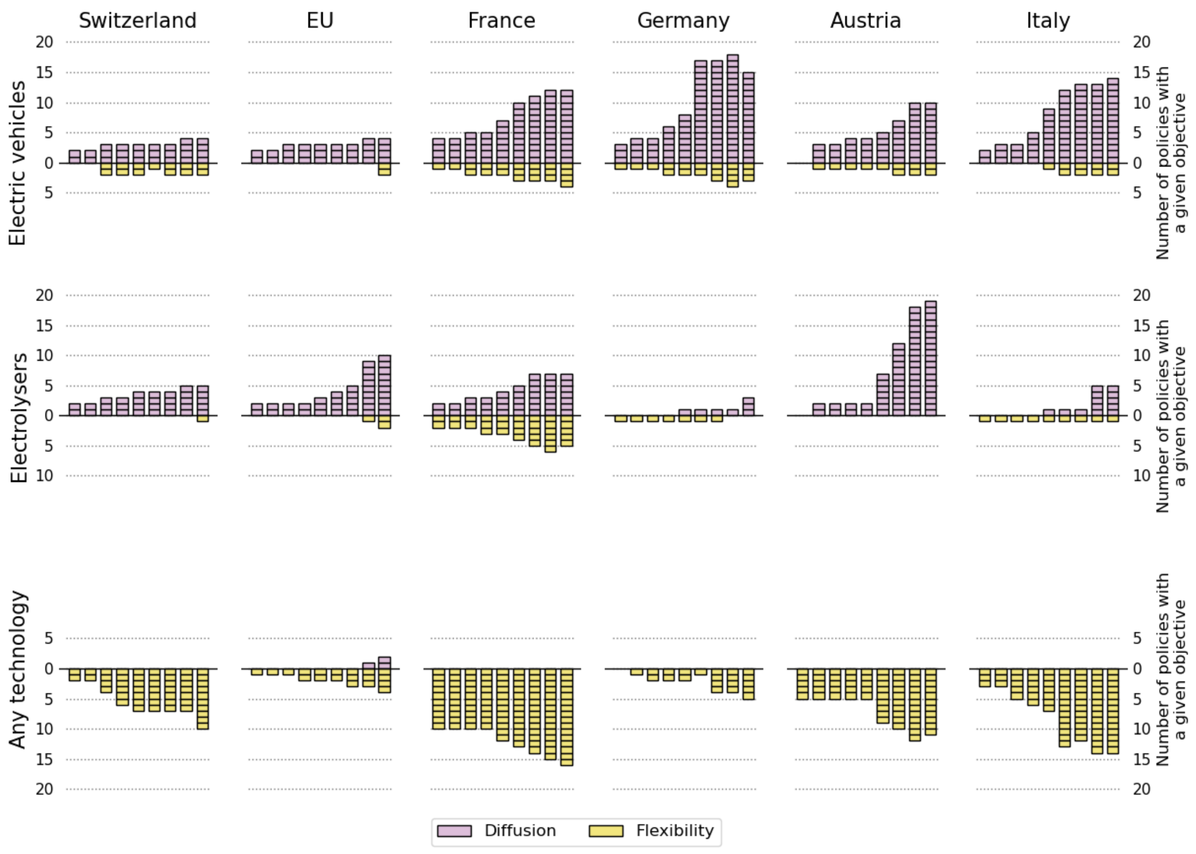

Figure 2: Evolution of diffusion *and* flexibility *policies for EVs and electrolysers. "Any technology" applies to both. PRELIMINARY RESULTS.*

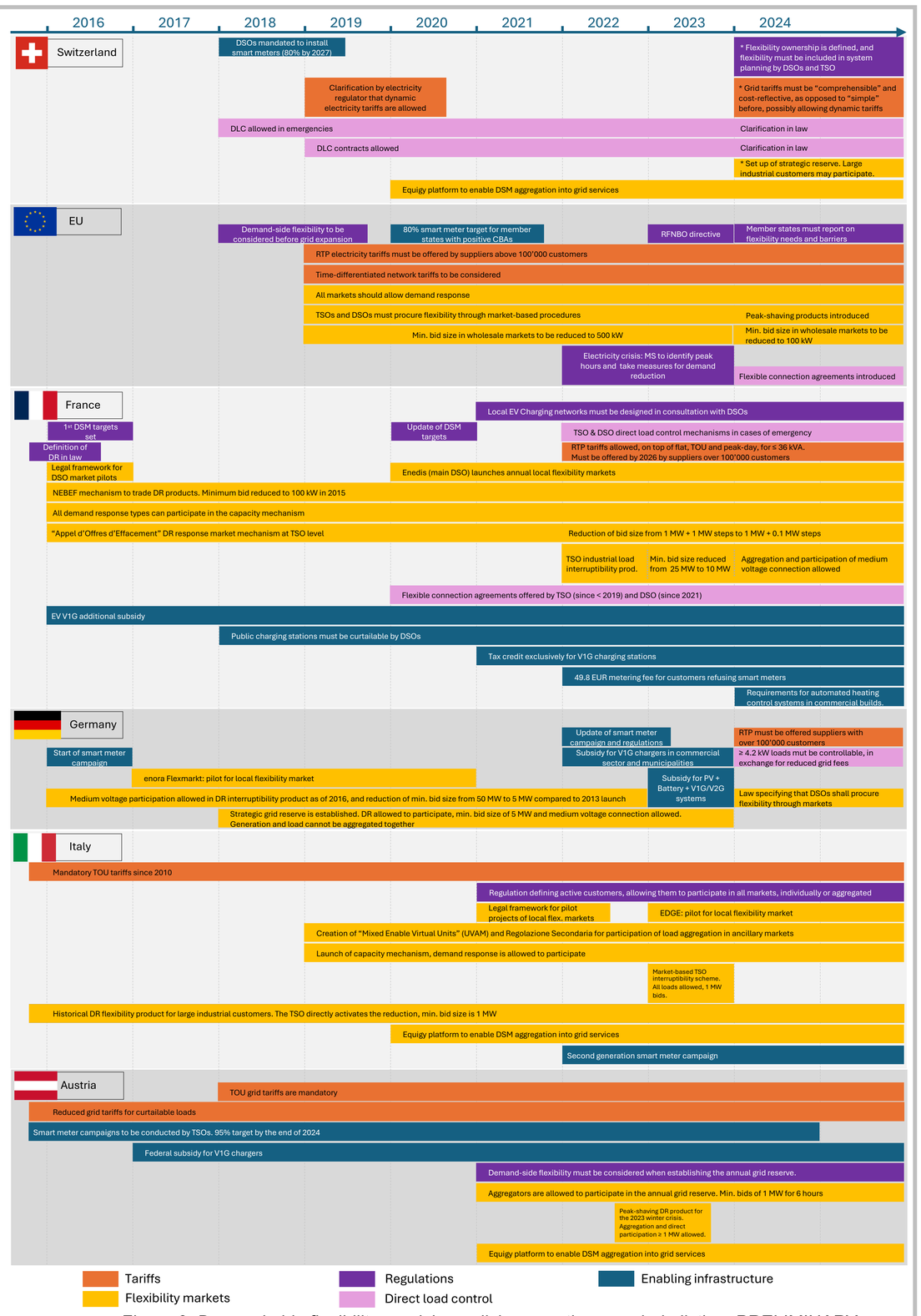

Figure 3: Demand-side flexibility provision policies over time, per jurisdiction. PRELIMINARY RESULTS.

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