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METODOLOGIA DE PESQUISA CIENTÍFICA EM ENGENHARIA DE COMPUTAÇÃO
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Departamento de Engenharia de Computação e Sistemas Digitais - PCS

Title: **GreenSDN: an Emulation Environment Towards the Development of Network Energy Efficiency Capabilities**

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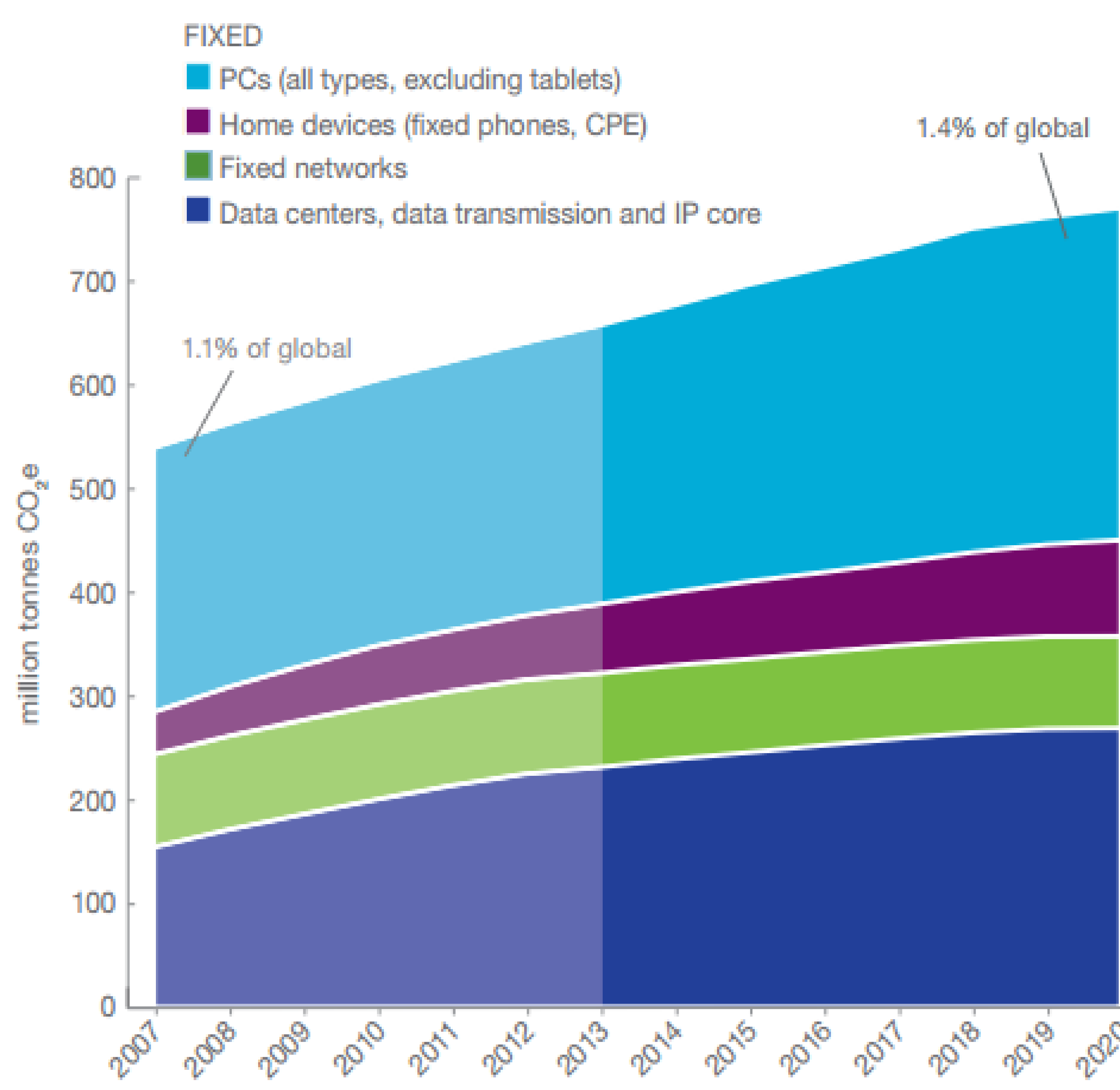
Introduction and Motivation



ICT carbon footprint will **increase 4%** per year **until 2020**

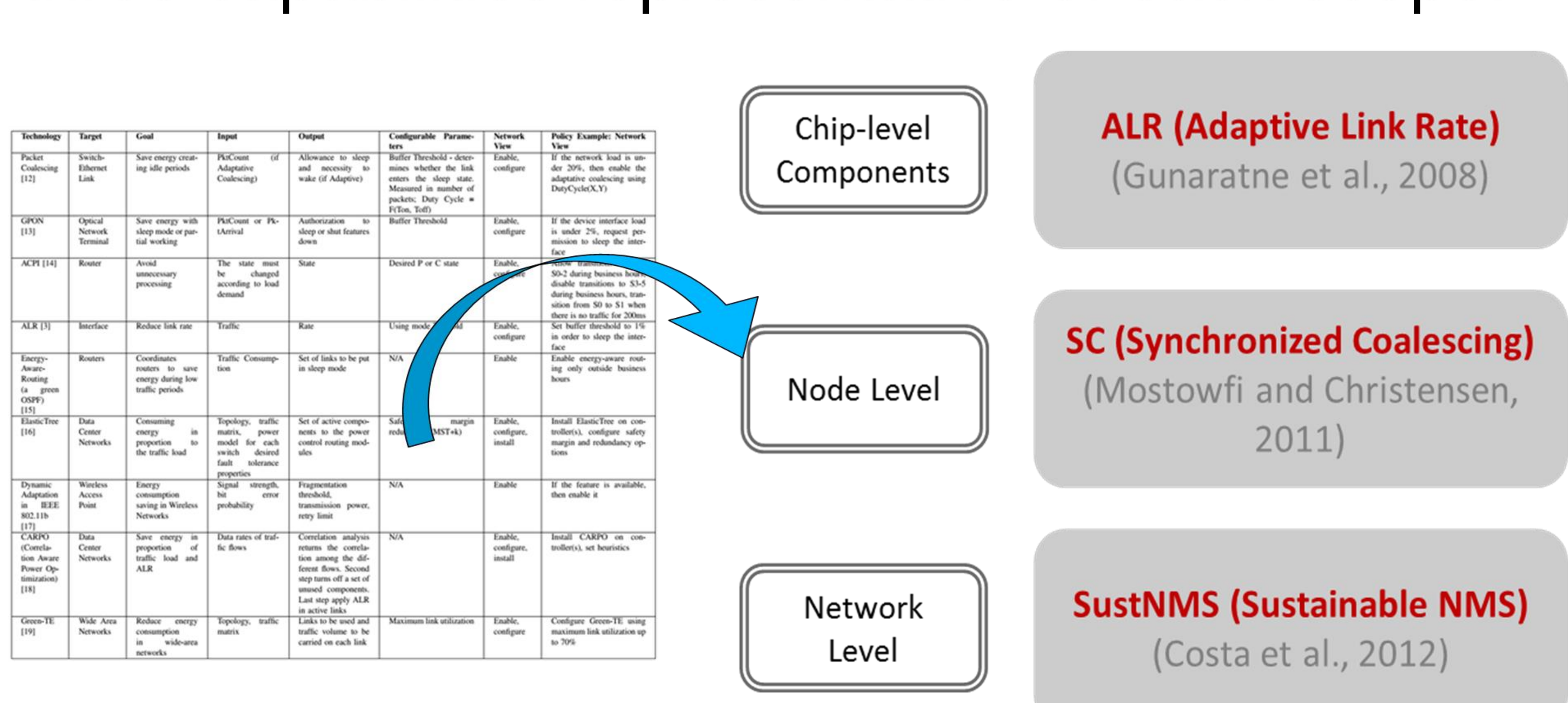
12.5 billion devices/users and **50x more data** are estimated in 2020

Energy consumption **is a major contributor** to the ICT carbon footprint.

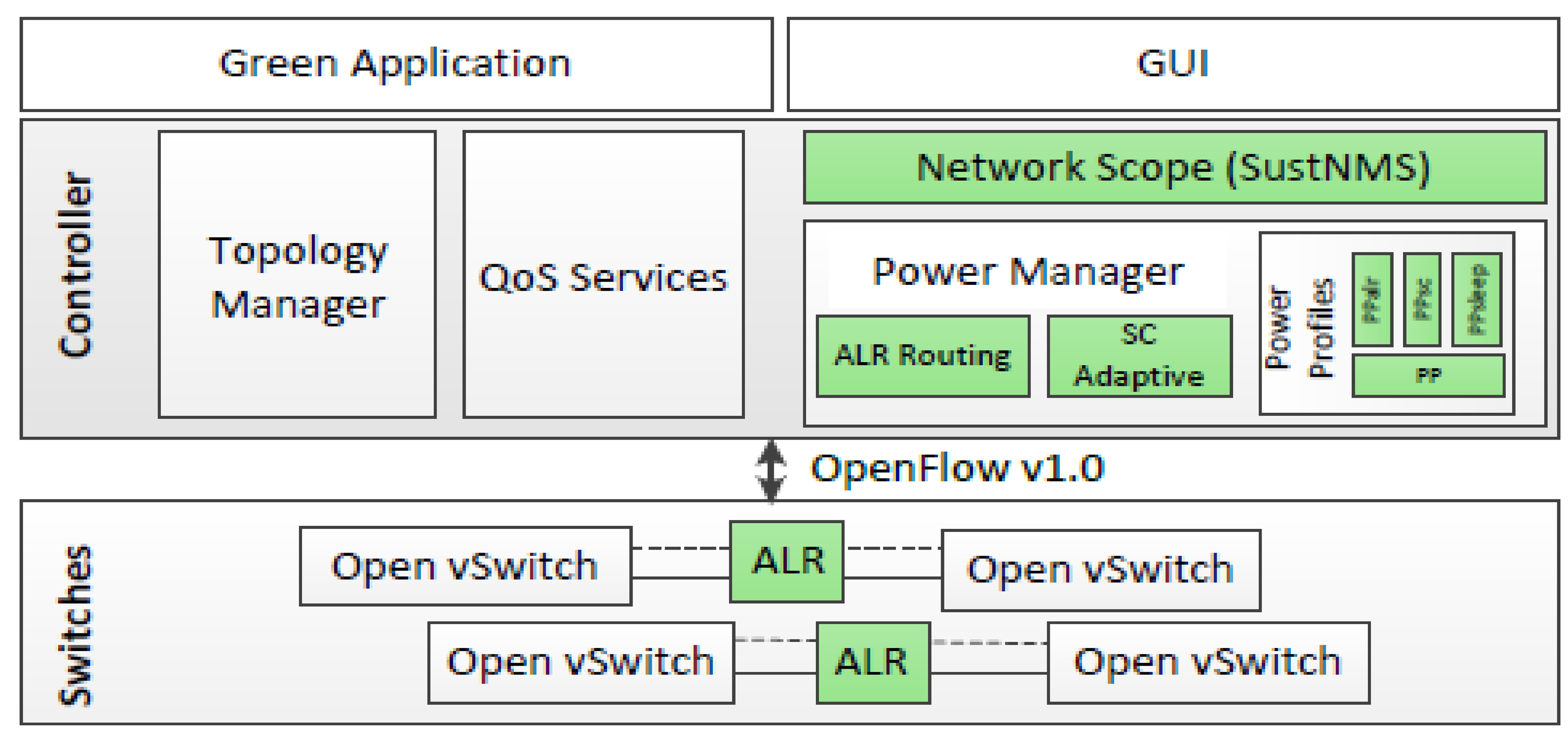
There are several isolated proposals on energy efficiency capabilities for networks, however characteristics of environments to emulate and validate such proposals are not discussed. In this regard, we present GreenSDN [02], an environment to develop and validate energy efficiency capabilities as well as power management applications.

Background

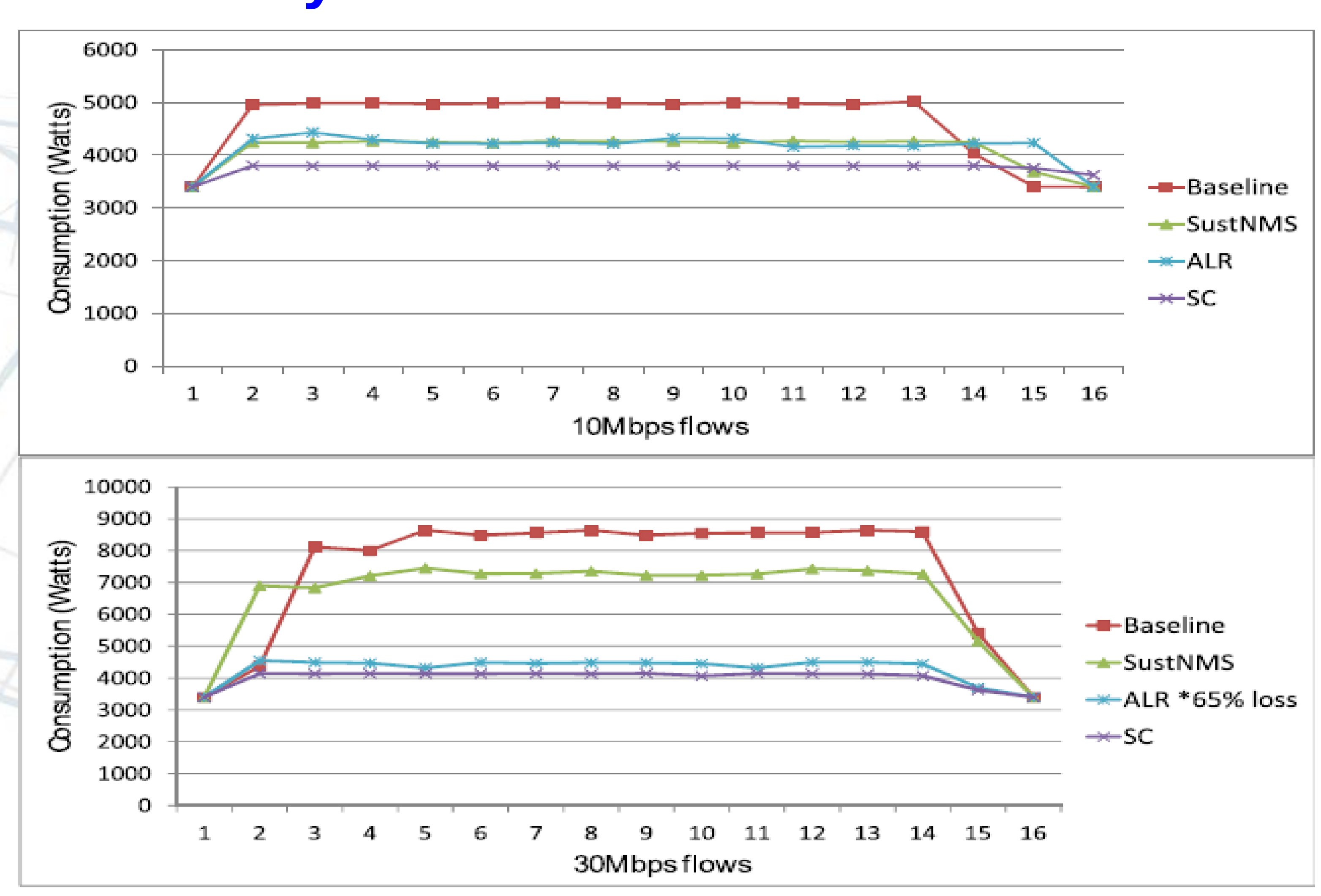
Among the available solutions to emulate a programmable OpenFlow network, Mininet combines the desirable features of simulators, testbeds and emulators, being considered the most popular and easier to use. For managing a network focusing on energy efficiency, many different solutions were proposed. We selected three capabilities representative of each scope.



Proposed Architecture



Preliminary Results and Considerations



The GreenSDN is a first step towards an environment to emulate and validate distinct green capabilities. The preliminary validation results pointed out that GreenSDN is aligned with the expectations based on previous works with SustNMS, ALR and SC.

Acknowledgements

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Referências Principais

[01] Ericsson, "Ericsson Energy and Carbon Report - Including Results from the first-ever National Assessment of the Environmental Impact of ICT," Ericsson, Tech. Rep., November 2014.
[02] B. Rodrigues, A. Riekstin, G. Januario, V. Nascimento, T. Carvalho, and C. Meirosu, "GreenSDN: Bringing Energy Efficiency to an SDN Emulation Environment," in Integrated Network and Service Management (IM), 2015 14th IFIP/IEEE Symposium on, May 2015.

Palavras-Chave

Emulation, Energy-Efficiency Networks, SDN.