



NACIONES UNIDAS
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energy consumption and efficiency in ports and terminals

indicator development and benchmarking

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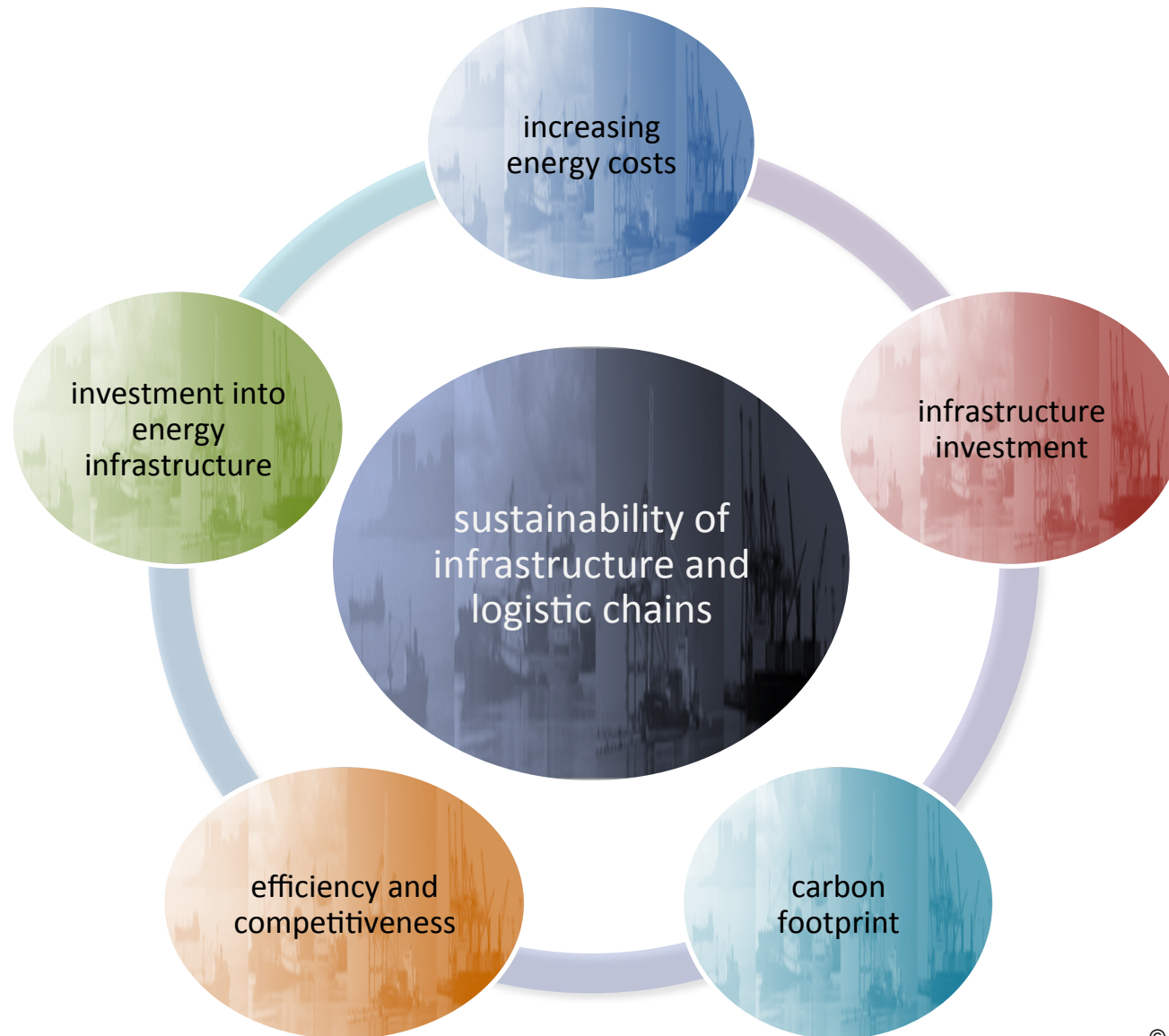
Infrastructure Service Unit
Natural Resource and Infrastructure Division
ECLAC, United Nations



12th PPRN meeting, july '14, Norfolk, VA



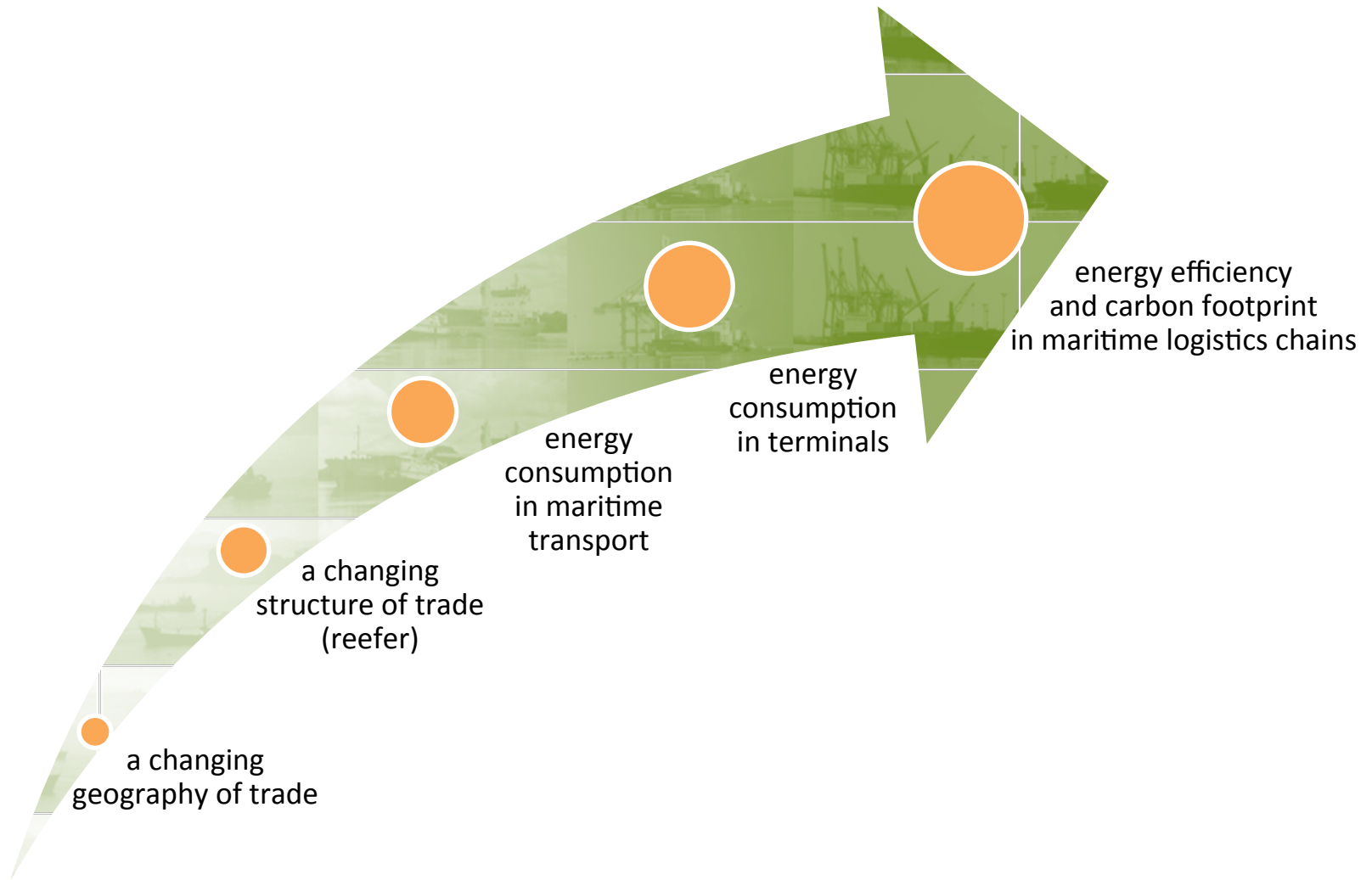
why should energy consumption be discussed in ports/ terminals?





research design

energy consumption container ports and terminals



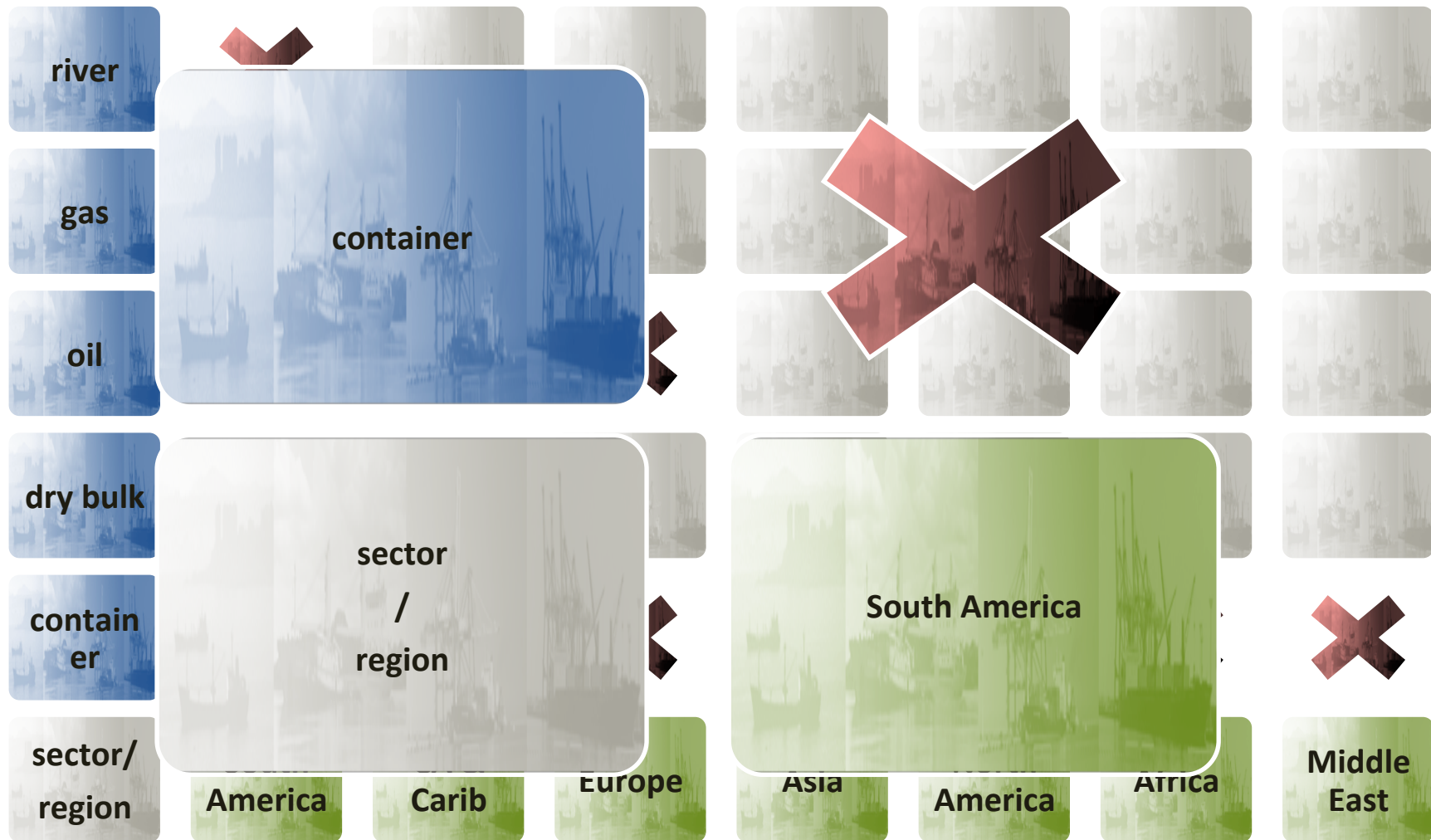


objectives

- analysis of impact of changes in geography and trade structure
- creating knowledge on the level and structure of energy consumption
- collection of data at terminal level
- calculation and analysis of energy consumption and efficiency in ports
- developing benchmarks and monitoring of energy consumption and energy efficiency indicators for terminals to allow for comparison and measure progress over time



type of terminals and regions covered





current situation of the project

- **coverage**
 - > 70 are participating on the international level (July 2014)
 - Container, bulk and gas/ petrol terminals are included
 - years 2010-2012/13
 - 4 continents
 - 17 countries
 - in Latam: Argentina, Chile, Colombia, Costa Rica, El Salvador Panamá, Paraguay, Peru, Uruguay
 - Latam container terminals represent >6 million TEUs (2013)
- **cooperation**
 - national governments (Chile, Peru, Colombia)
 - private terminal operators (container and bulk industry)
 - logistics associations and NGO's (e.g. Smart Freight Group)
 - EU projects (Green Efforts)
- **discussion and dialogue between the industry and the public sector**
 - Regional seminar in May 2014 in Santiago, Chile (60 participants)
 - Smart Freight Group seminar in September in Sao Paolo, Brazil

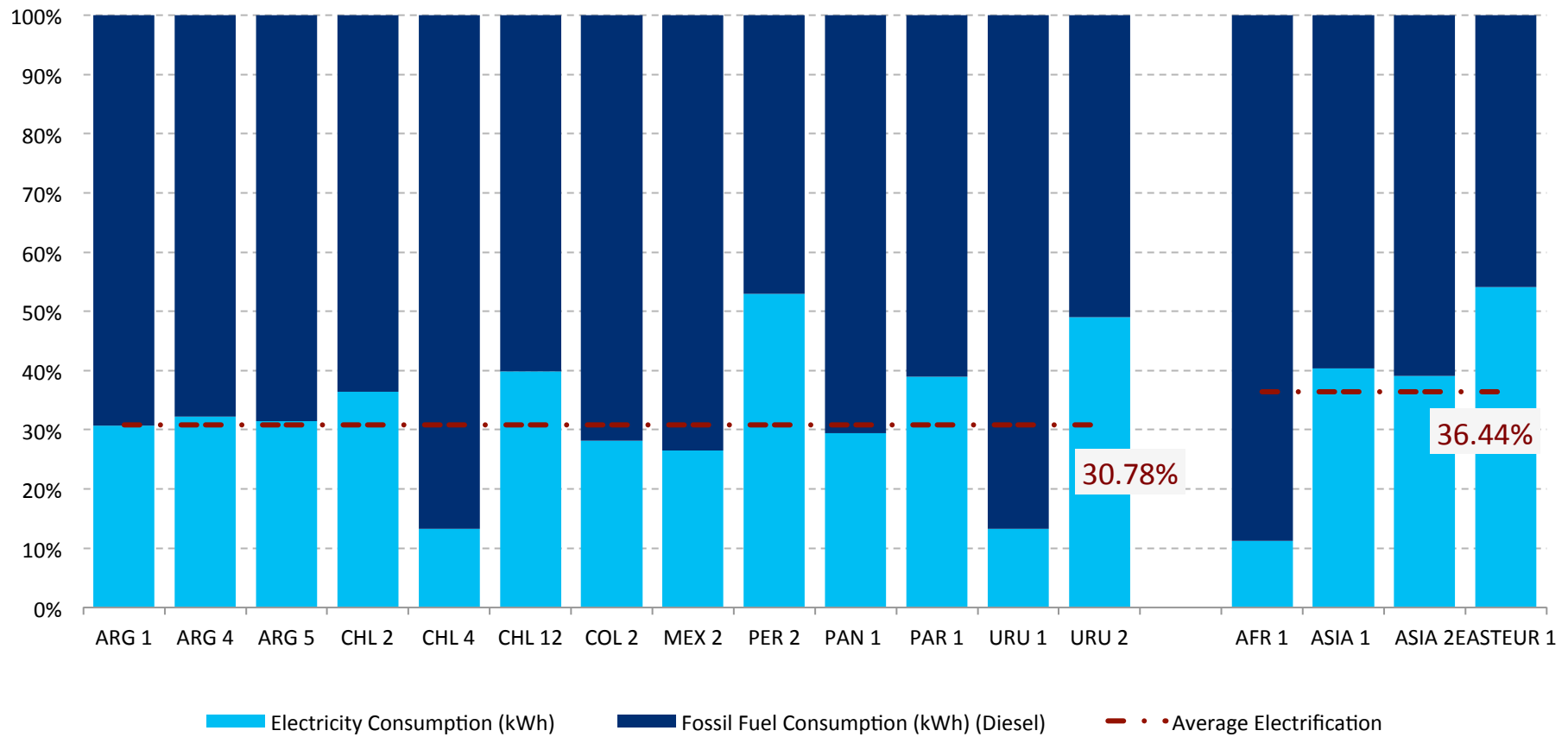


some results

energy consumption container ports and terminals



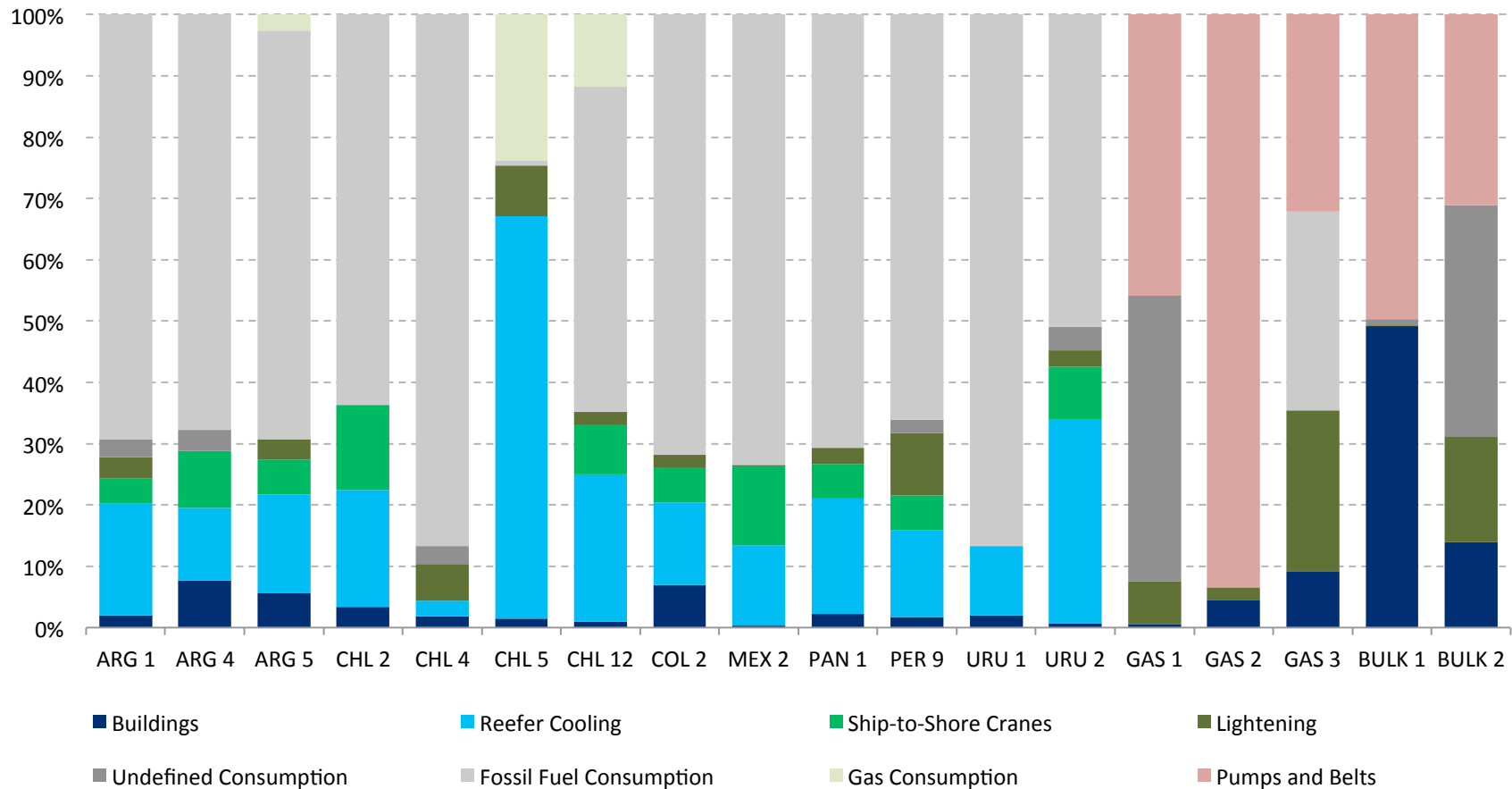
energy consumption in container terminals per type of energy consumed (in%)



A complete electrification of ports would mean an average increase of **62%** of electricity consumed and, thus increasingly straining national electricity networks in esp. developing countries



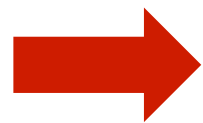
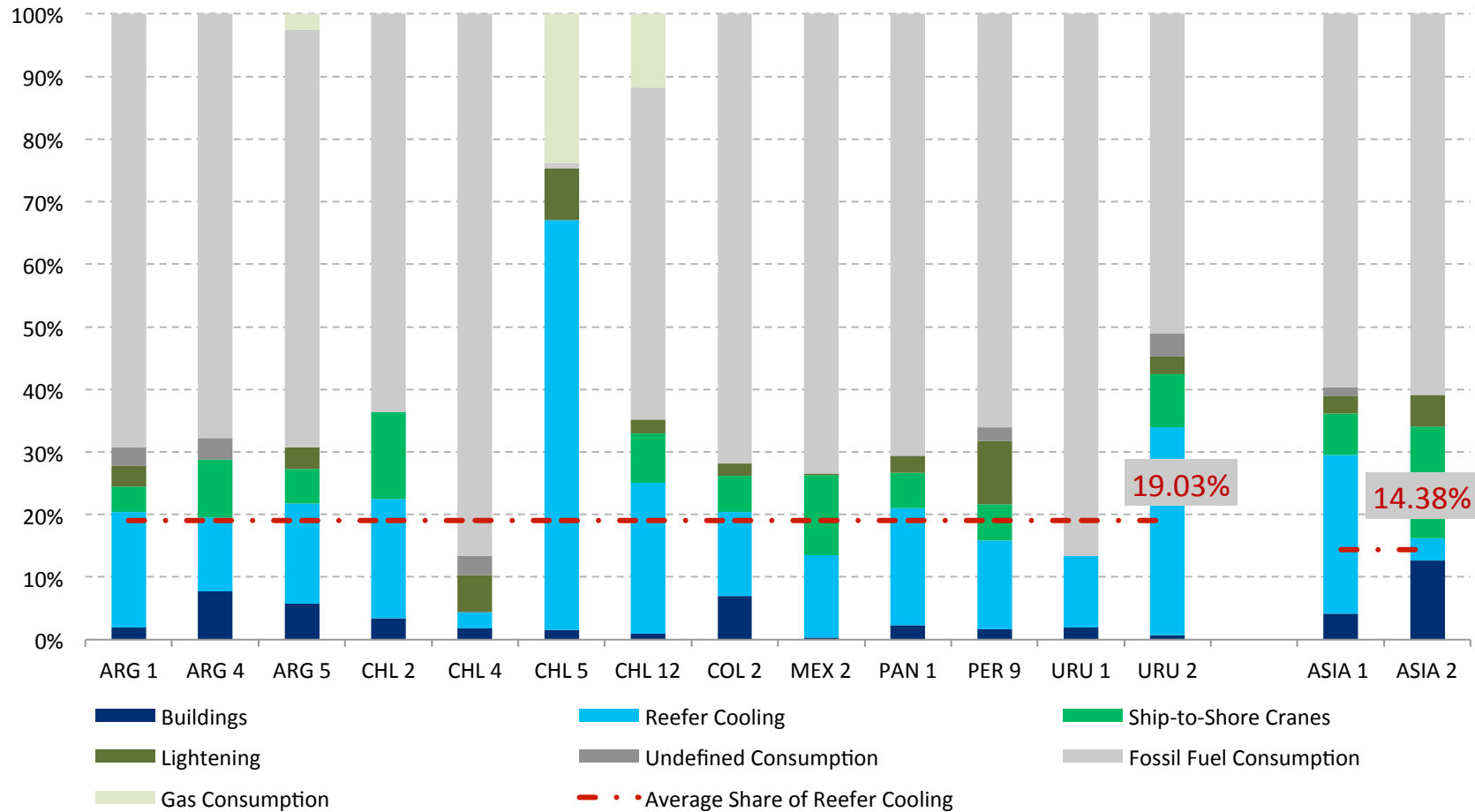
structure of energy consumption in different types of terminals, 2012



The structure of energy consumption changes with the products handled as well as with the efficiency of different operations and equipment



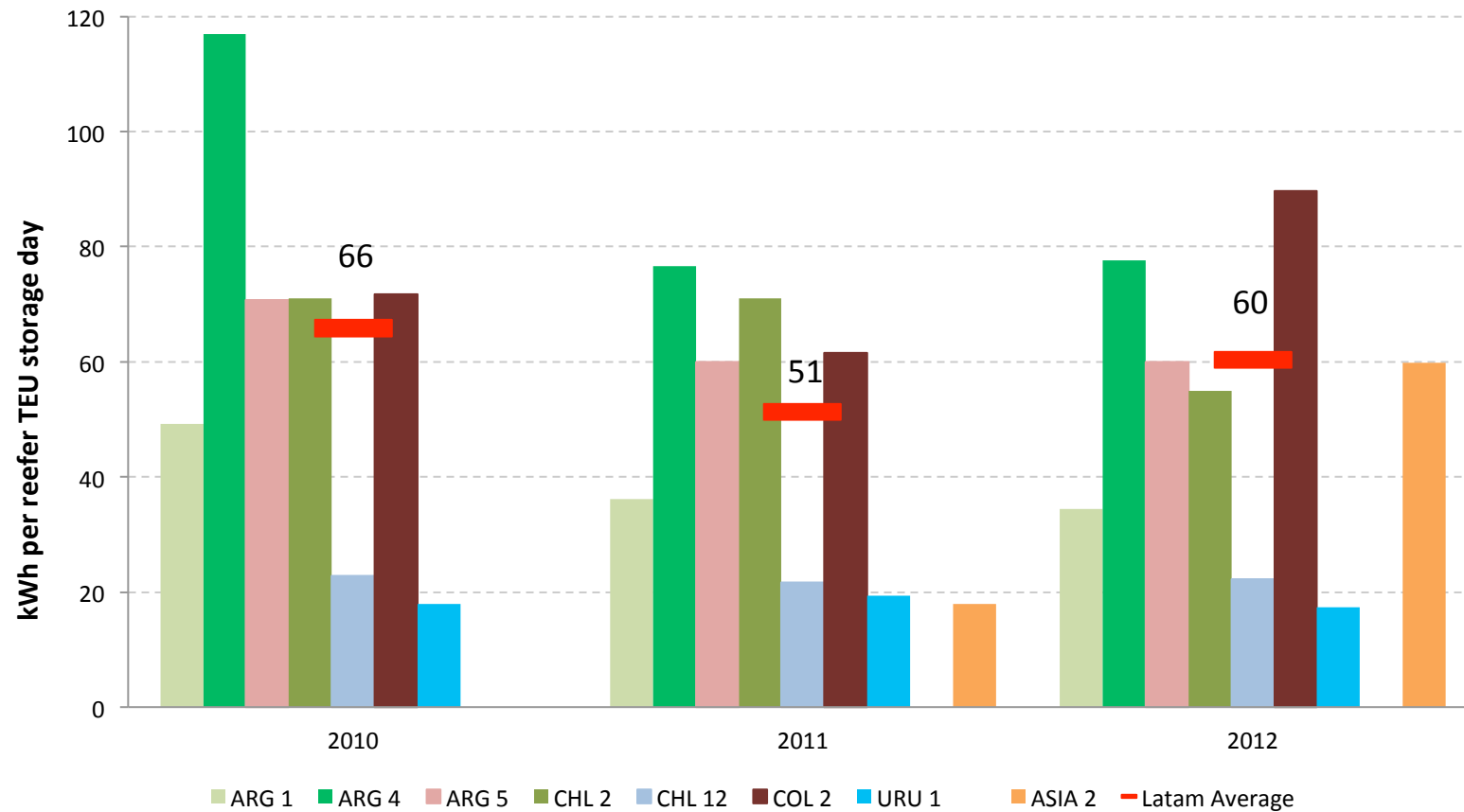
structure of energy consumption in container terminals, 2012



The storage of reeper consumes 20% on average of total electric energy

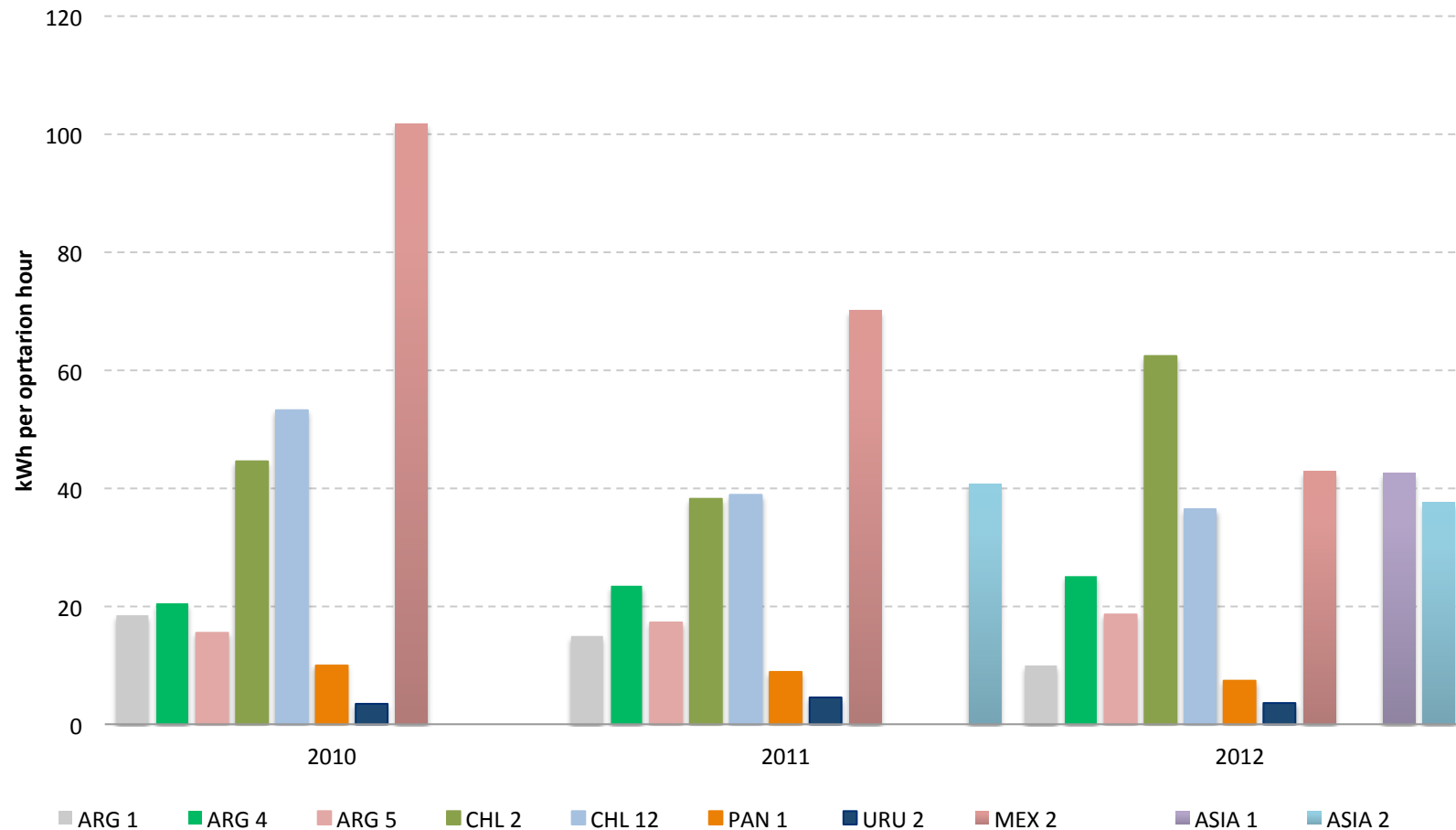


energy consumption (kWh) of one reefer TEU per storage day





energy consumption (kWh) STS cranes per operation hour





emerging issues

next steps and challenges



challenges for increasing energy efficiency

- seasonality of exports and thus, energy demand
- variation of demand in relation to regular port services
- technological renewal
- link between energy consumption and carbon footprint
- implications for the relationship between ports and their surrounding cities – less pollution (+), installation of wind turbines (not welcome everywhere)



next steps

- further geographical expansion data for all terminal types
- intensified dialogue on construction of energy efficiency indicators for terminals
- identification of good practices



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questions?

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