



Energy efficiency policies implementation

A world wide perspective

The WEC energy efficiency 2012-13 survey

SEMED/Arab Region , Jordan, APRIL 15-16 2013

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1. Introduction

- 2. Overview of energy efficiency measures
- 3. Energy efficiency measures by sector
- 4. Conclusion and recommendations

Mediterranean Association of the National Agencies for Energy Conservation.

The Medener network

- Non-profit international Energy association, created in 1997.
- 12 Mediterranean countries national agencies: 5 from North, 7 from South



Rotating presidency:
2010/2012 Morocco ADEREE
2012/2014 France ADEME

Ressources:
- Members contributions
- Subsidies or financial aid
- Remuneration for services

The MEDENER Network



ADEME, Agency for Environment and Energy Management, **France**



ADEREE, National Agency for Renewable Energies and Energy Efficiency Development, **Morocco**



ADENE, Energy Agency, **Portugal**



APRUE, National Agency for the Promotion and the Rationalization of the use of Energy, **Algeria**



ALMEE, Lebanese Association for Energy Management and Environment, **Lebanon**



ENEA, National Agency for New Technologies, Energy and Sustainable Economic Development, **Italy**



NERC, National Energy Research Center, **Jordan**



CRES, Center for Renewable Energies and Energy Efficiency, **Greece**



IDAE, Institute for Diversification and Energy Savings, **Spain**



NERC, National Energy Research Center, **Syria**



PEC, Palestinian Energy and Environment Research Center, **Palestinian Authorities**

MEDENER : Objectives and activities

Fields of activities

- Rational use of Energy
- Development of renewable energy sources
- Environment protection linked to energy issues

Objectives

- To be **a reference for Energy Efficiency and Renewable Energy** at regional level
- To **share members** know-how and experiences

Asset

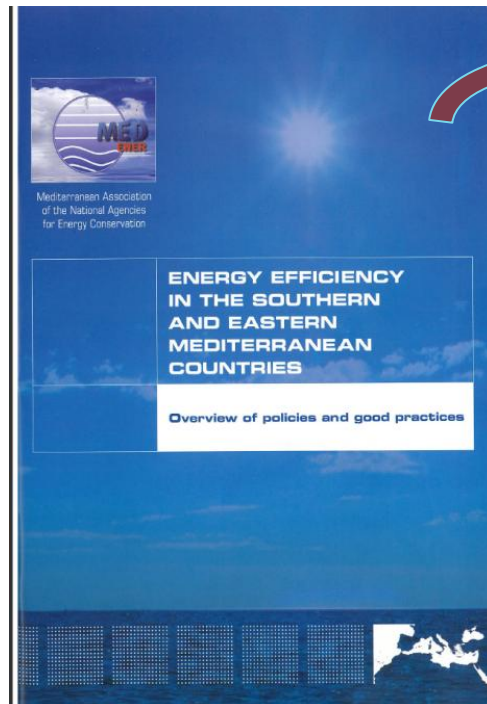
- **Public bodies** in charge of EE and RE national policies with **members expertise** capacities

Activity: exemple 1

Supporting EE and RE policies and measures

Example of publications

- Overview of policies and good energy efficiency practices in the Southern and Eastern Mediterranean countries



Eco-Lumiere Algerian Program

Activity: exemple 2

Identifying emblematic programs in EE and RE

Example of program

➤ Efficiency Energy in buildings in Morrocco : ADEREE/ADEME Cooperation

→ Extension of successfull projects implemented in southern countries (Tunisia, Lebanon...)

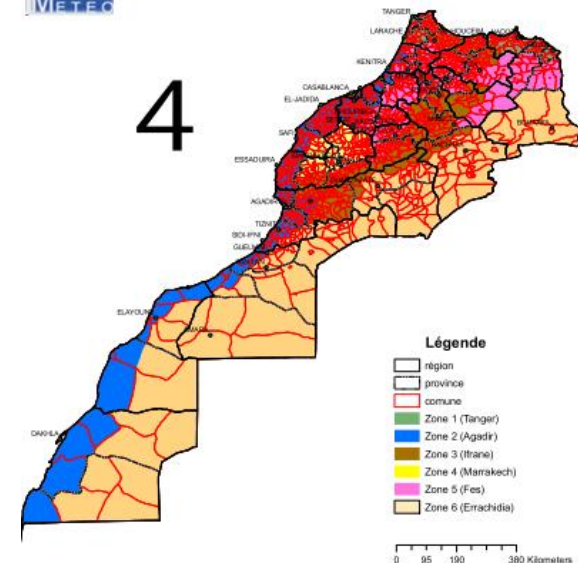
- 36% of energy consumption for the building sector
- Need more 200 000 new buildings a year
- A new building code in Morrocco

2010 – 2013: 13,2 millions euros for a global project with several financial partners (UNDP, UE, AFD, FFEM...)

- ☐ Demonstration projects
- ☐ Training for new building code
- ☐ Promotion of good practices



ZONAGE CLIMATIQUE DU MAROC



Activity: exemple 3

Implementing energy conservation observatories

Energy efficiency indicators

Example of observatory

- National and regional had hoc data bases gathering MEDENER countries
 - Comparable indicators using the ODYSSEE methodology
 - National and regional reporting on energy efficiency trends to perform benchmark analysis

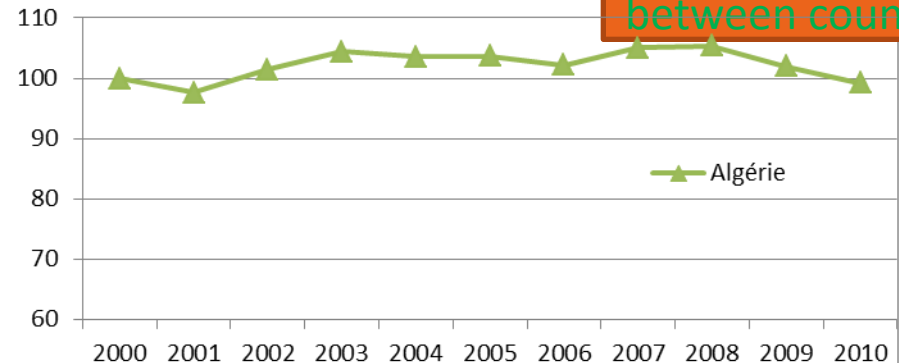
*Temporary Data September 2012

Indicateurs macro-économiques/ Macro-economic indicators	2004	2005	2006	2007	2008	2009	2010	2011	2012
PIB (monnaie nationale) (grs constant)	2044	2162,15	2287	2407,9	2524,9	2642,9	2761,2	2879,2	2997,2
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National macro data base per countries

Evolution des intensités énergétiques finales*

base 100=2000



Comparison between countries

Algerie

Activity : exemple 4

Making the go-between with European and international financial investors and energy companies

Example of sources of funding

■ European Programm : Solar Result Guarantee

- Industry and tertiary sector
- All members Medener
- Thermal collective solar



■ Future Project

- Answer for call for tender : « *Como Sud* »

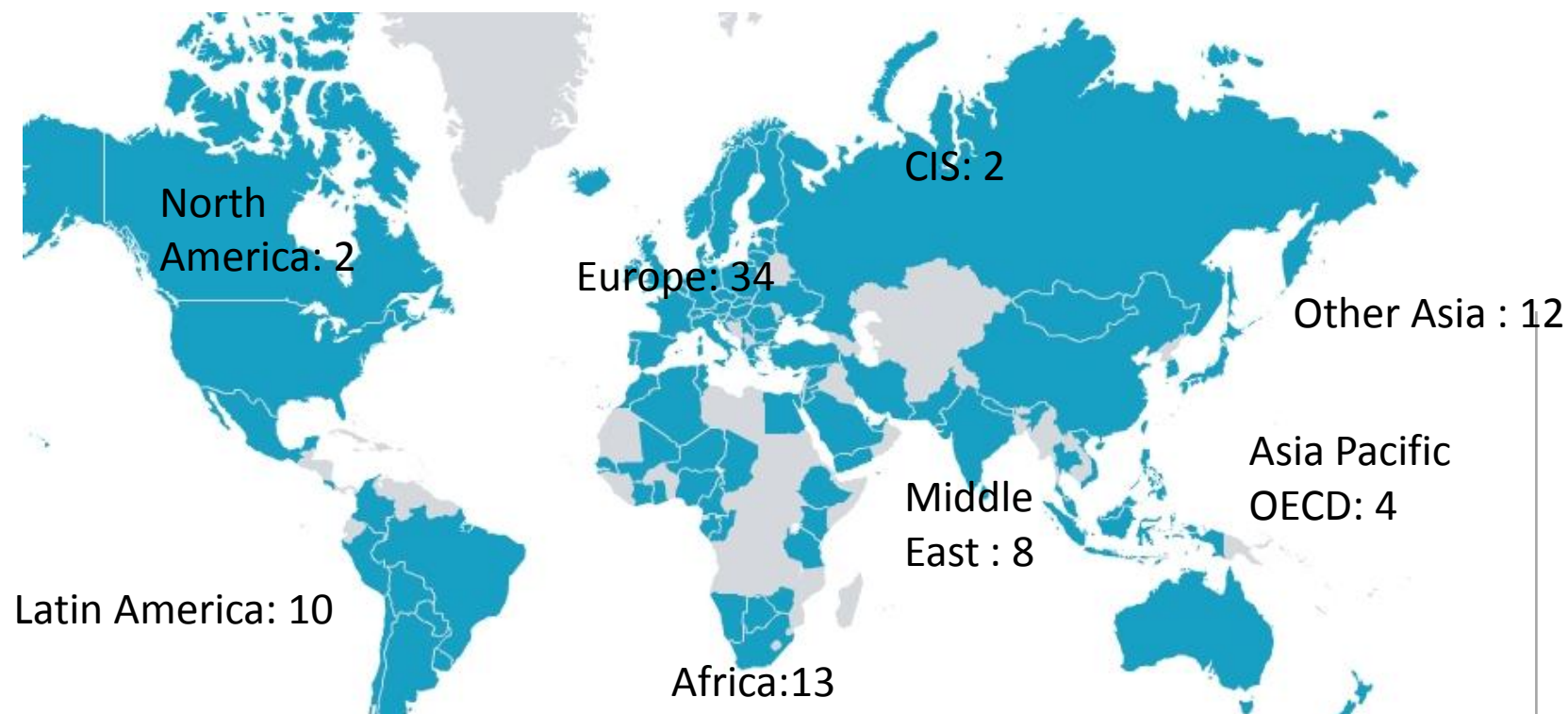
Medener : Perspectives

- A **regional exchange platform** to promote the role of **public agencies** in charge of national policies
- A better connection between the **Union for the Mediterranean and MEDENER Network** through a technical expertise
- A **strengthened governance** and sustainable means

The WEC- ADEME 2012-2013 survey overview

- A survey on policies and measures has been carried out with national WEC member committees and other organisations in 2012-13; updates the previous survey of 2009
- This survey covered :
 - The existing institutions (energy agencies) and energy efficiency programmes and targets.
 - The energy efficiency measures by type: financial, fiscal, regulation and voluntary agreement
- In total 85 countries are covered
- All the survey results have been included in an on line data base available at http://www.wec-policies.enerdata.eu/wec_policies-test/#BC-services

Countries covered by 2012-13 survey: 85 countries*



Measures covered in the survey

- **Regulations:**

- Minimum Efficiency Performance Standards (MEPS) and labels for electrical appliances and cars, buildings;
- Other regulatory instruments: Mandatory energy audits, mandatory energy managers, mandatory energy saving plans, energy saving quotas;
- Mandatory training for professionals,
- Energy saving obligations.

- **Financial measures:**

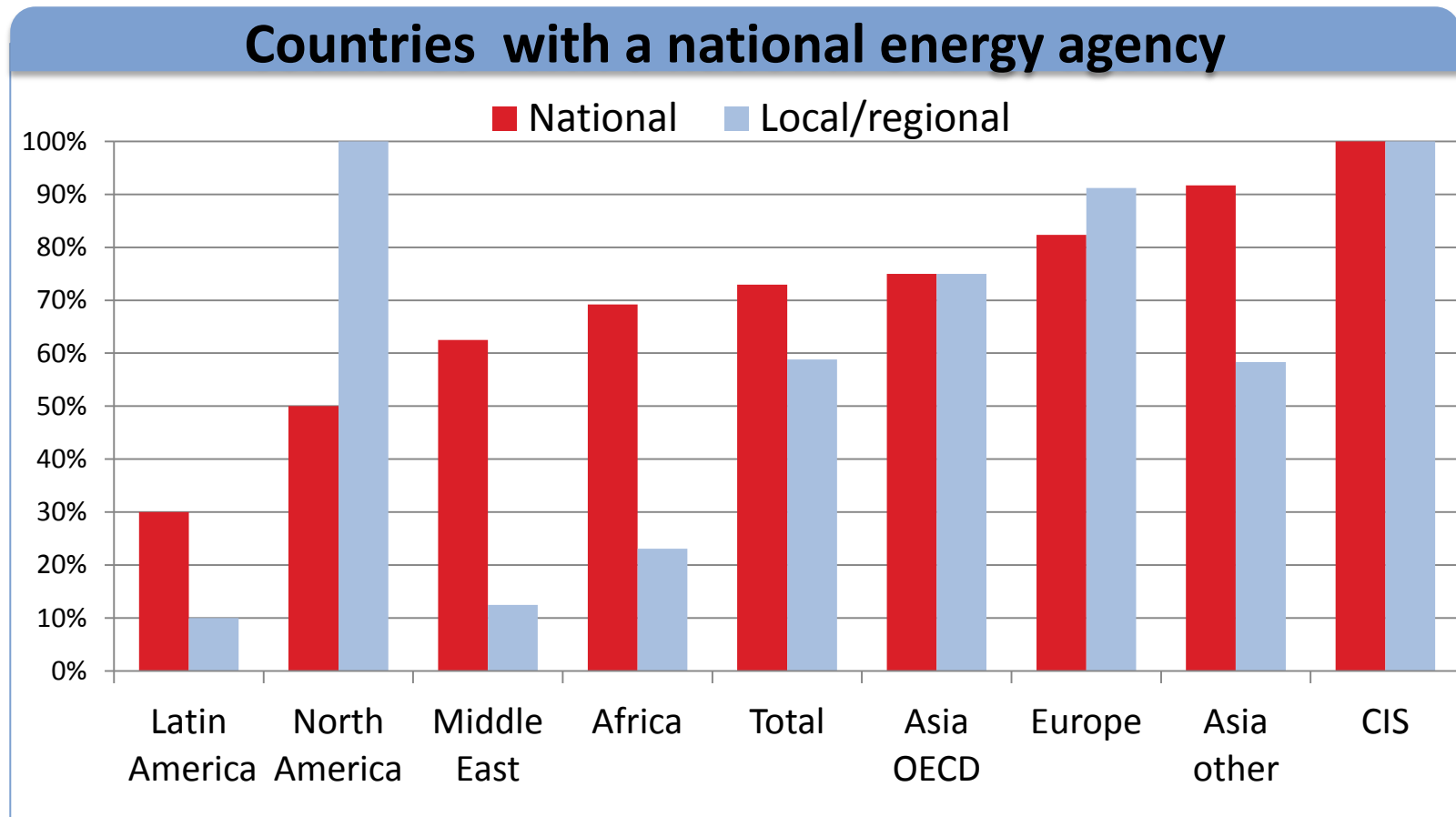
- Subsidies for audits by sector
- Subsidies or soft loans (i.e. with subsidised interest rates) for energy efficiency investment and equipment by sector and type of equipment

- **Fiscal measures:**

- Tax credit for efficient equipment, and tax on inefficient appliances
- Accelerate depreciation by sector,
- Tax reduction for efficiency investment by type of tax and equipment

1. Introduction
- ▶ **2. Overview of energy efficiency targets & measures**
3. Energy efficiency measures by sector
4. Conclusion and recommendations

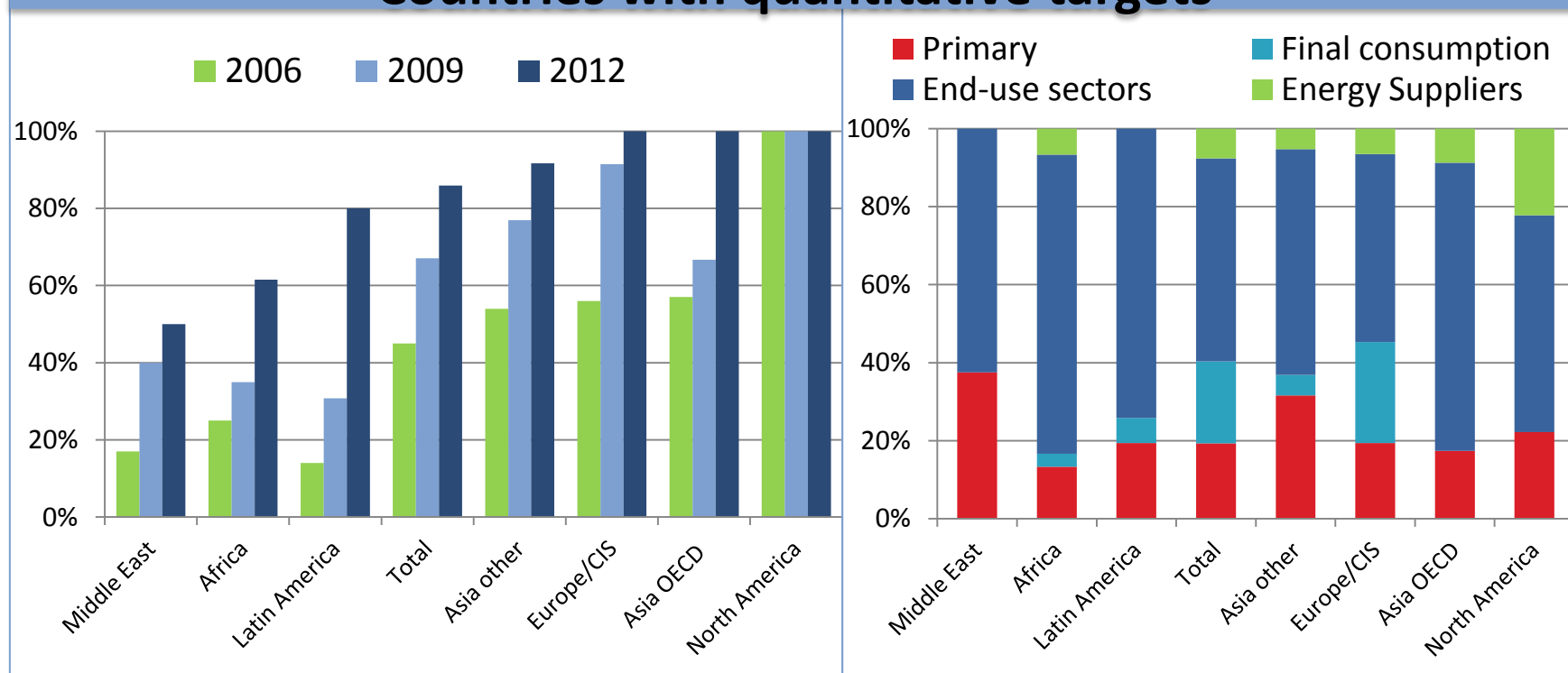
As a whole, 73% of surveyed countries (i.e. 62 countries) have a national energy agencies ; around half of surveyed countries have local or regional agencies. Agency recently created: China, Indonesia, Senegal and Ukraine



Increasing number of countries with quantitative targets

- Progression in all regions → more ambitious policies
- 60% have end-use sector targets, around 20% have targets on primary consumption.
- Different focus according to regions: in Europe target on final consumption

Countries with quantitative targets

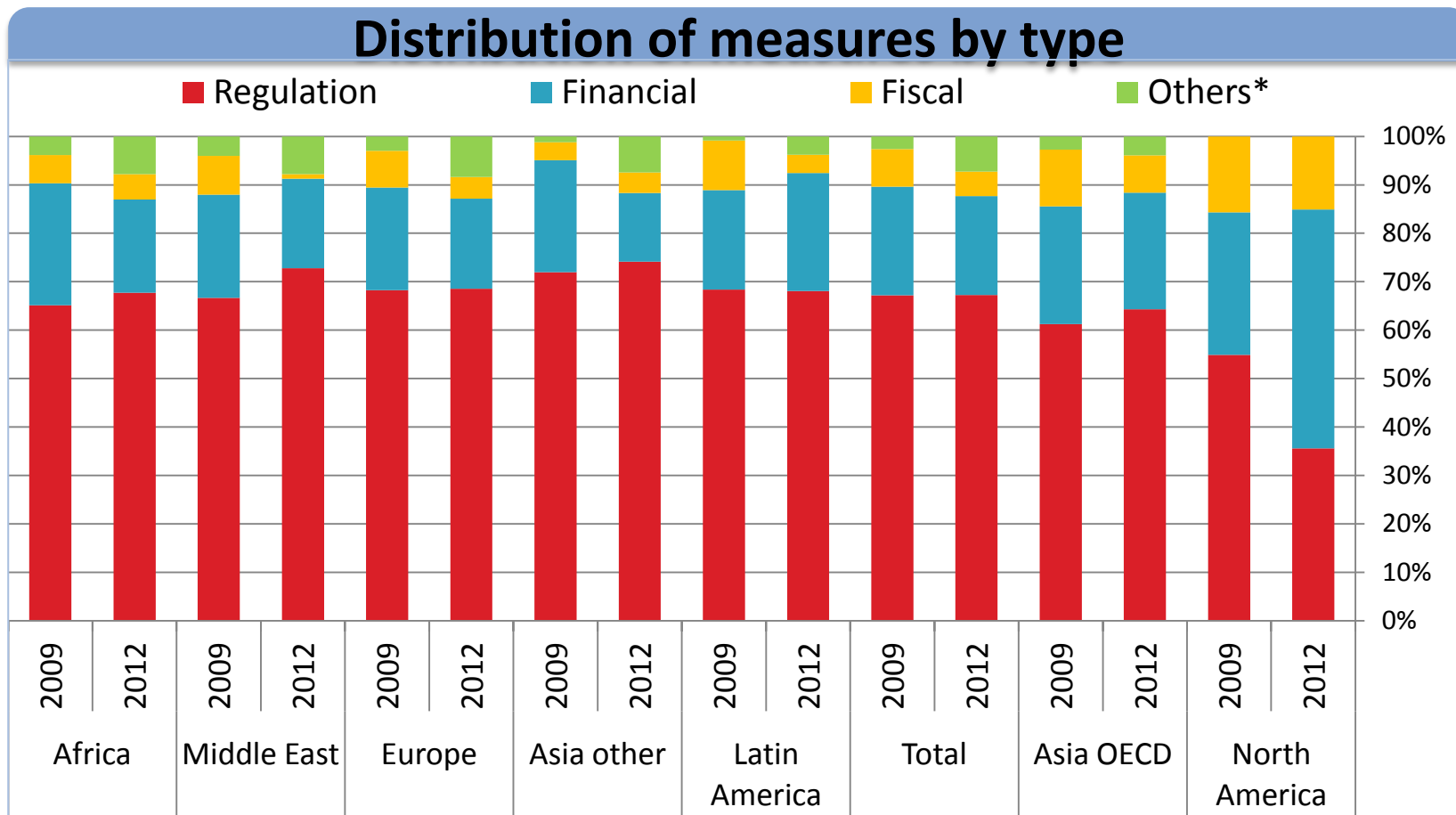


2006: 1st WEC survey

2009: 2nd WEC survey

Source: WEC survey 2012

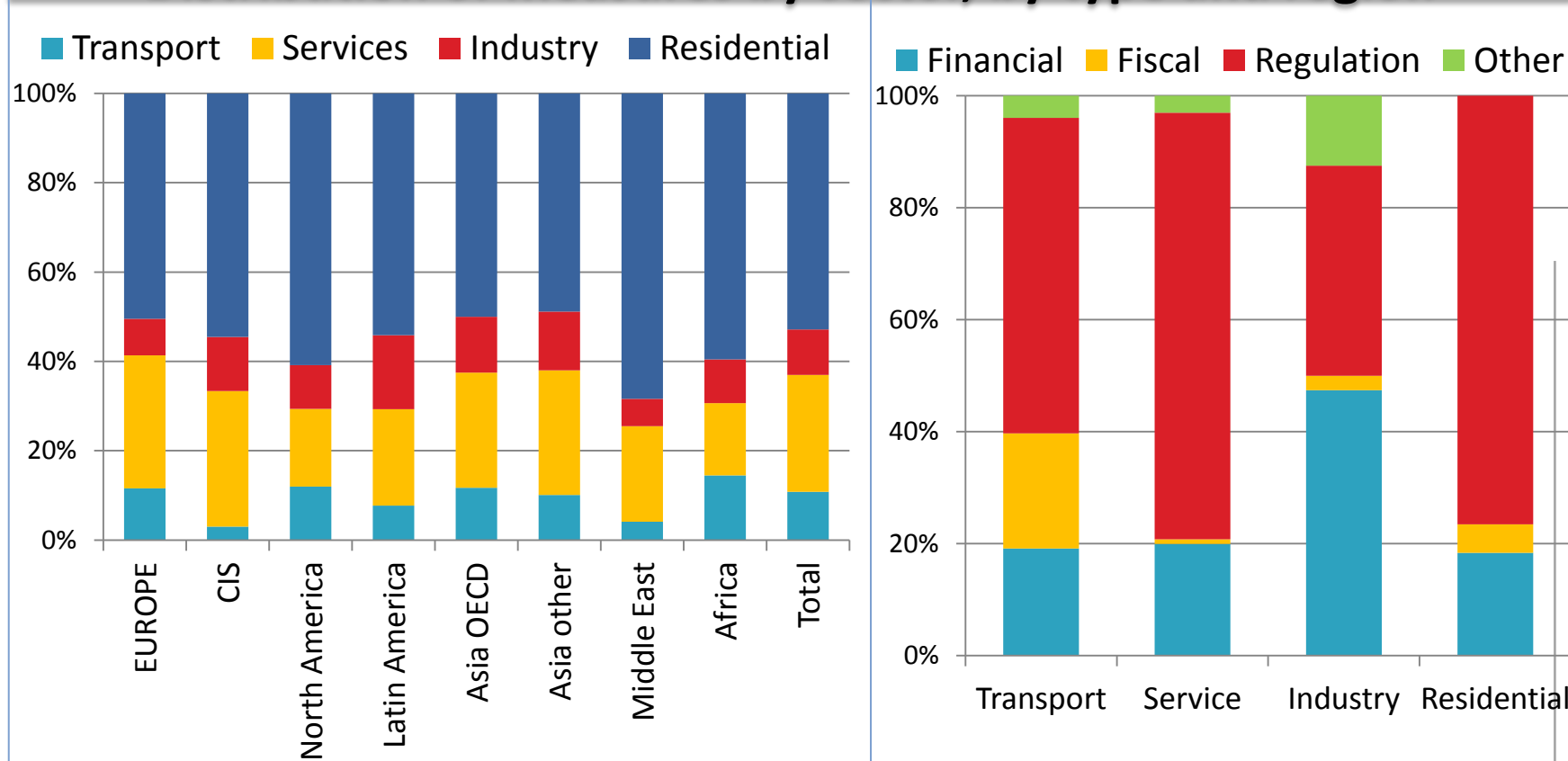
Predominance and increasing share of regulation (around 70% of measures on average in 2012), followed by financial measures (20%), that are dominant in North America.



Source: WEC survey 2012

Measures on residential sector are dominant in all regions (60% on average);
 Regulation are important in services and residential sectors ;
 Financial incentives are more important in industry (e.g. grants for energy audits)

Distribution of measures by sector, by type and region



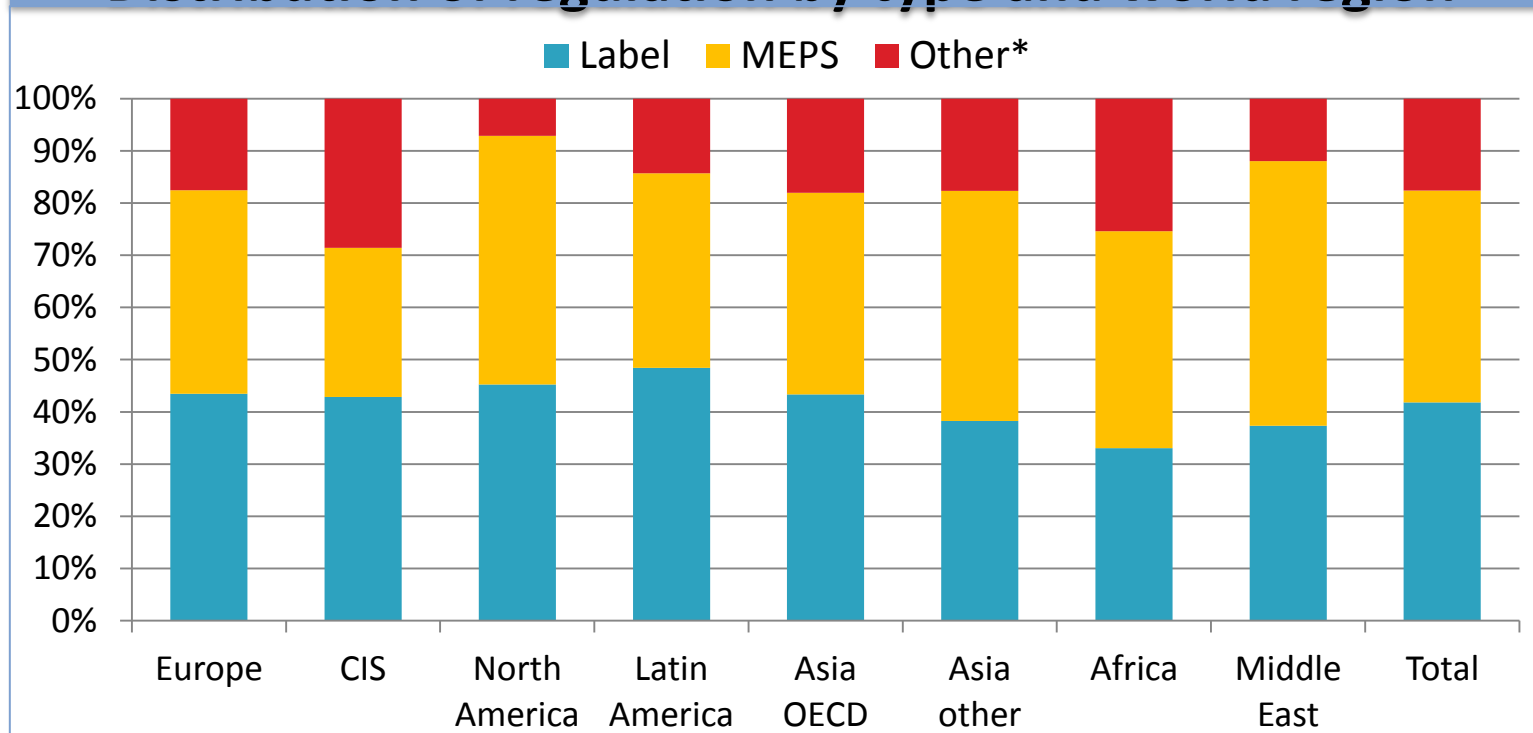
Source: WEC survey 2012

Labeling is the dominant regulation (55% on average).

Minimum energy performance standards are also important with around 40% of total regulatory measures.

Other regulations (~ 5%) correspond mainly to mandatory requirements for large consumers (e.g. energy audits, energy managers, energy consumption reporting and energy savings)

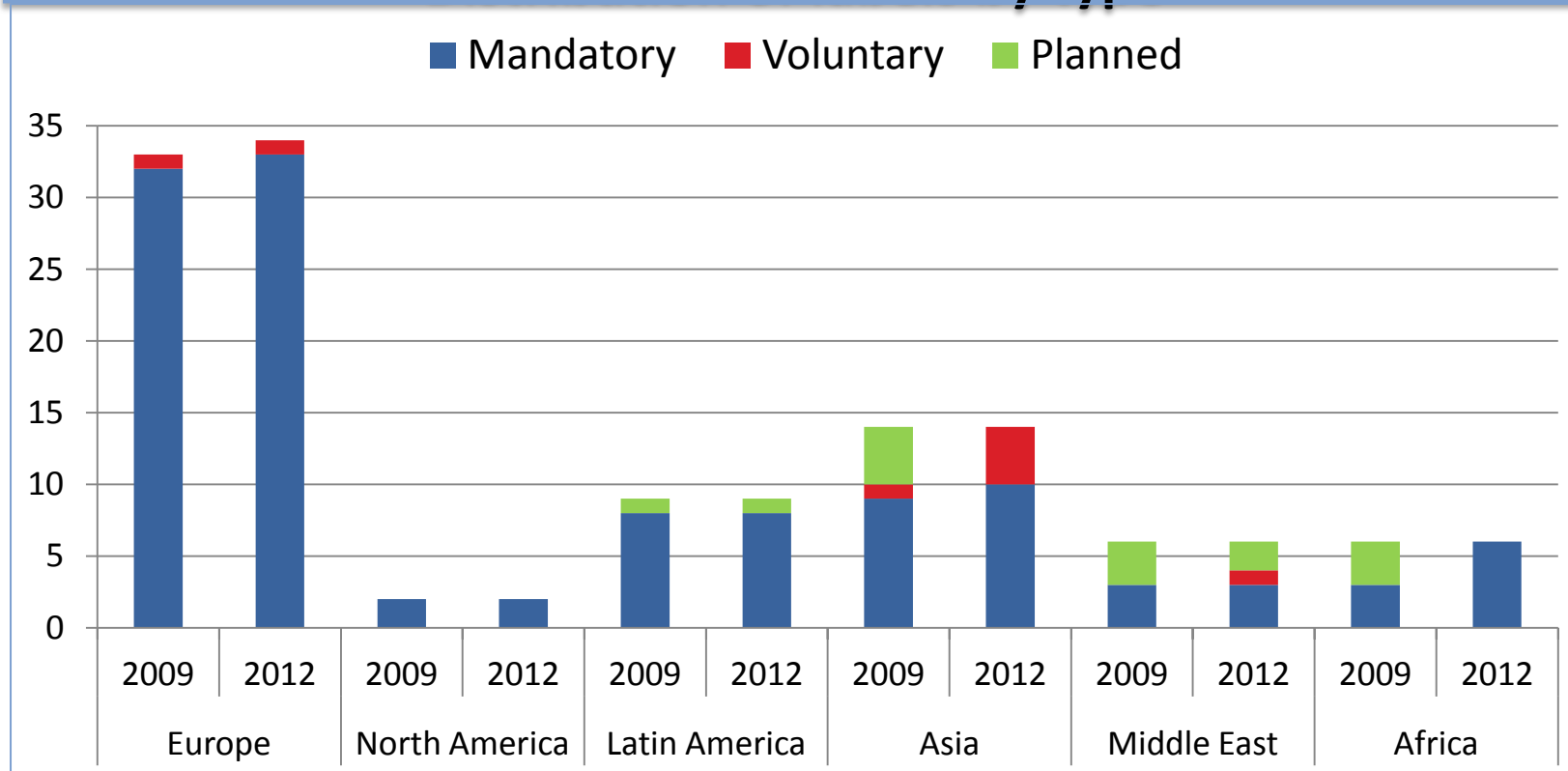
Distribution of regulation by type and world region



*Other: mandatory energy audits, mandatory energy managers, mandatory energy consumption reporting; mandatory energy savings plans, mandatory energy training, and incandescent lamp phase-out

All countries in OECD have implemented labels; 90% in non OECD Asia and Middle East; 50% in Africa. In total, 71 surveyed countries have a label scheme, that are mandatory in 87% of them. Some labels planned in 2009 are now implemented in Asia for instance.

Distribution of labels by type

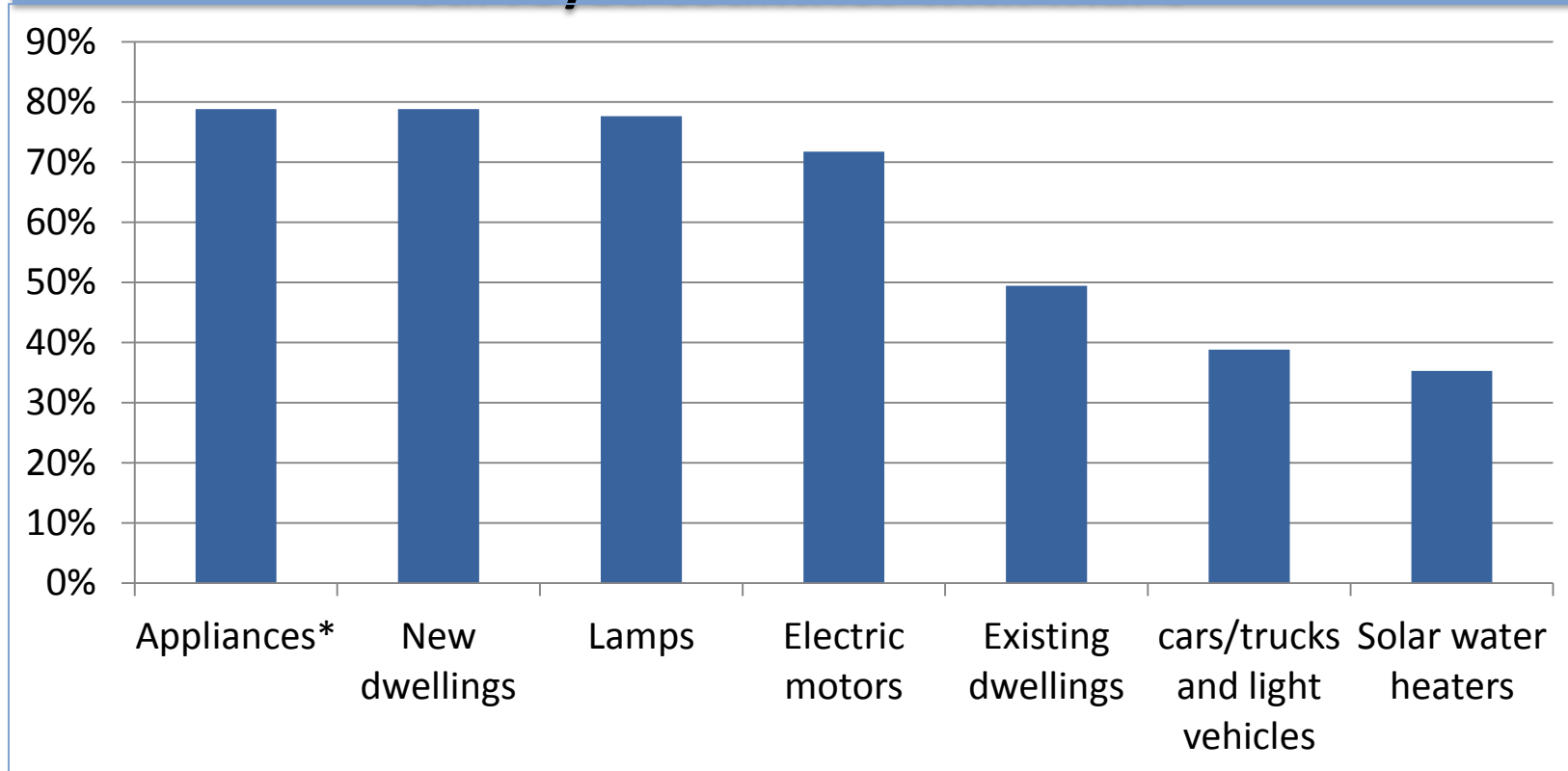


2009: previous WEC survey

Source: WEC survey 2012

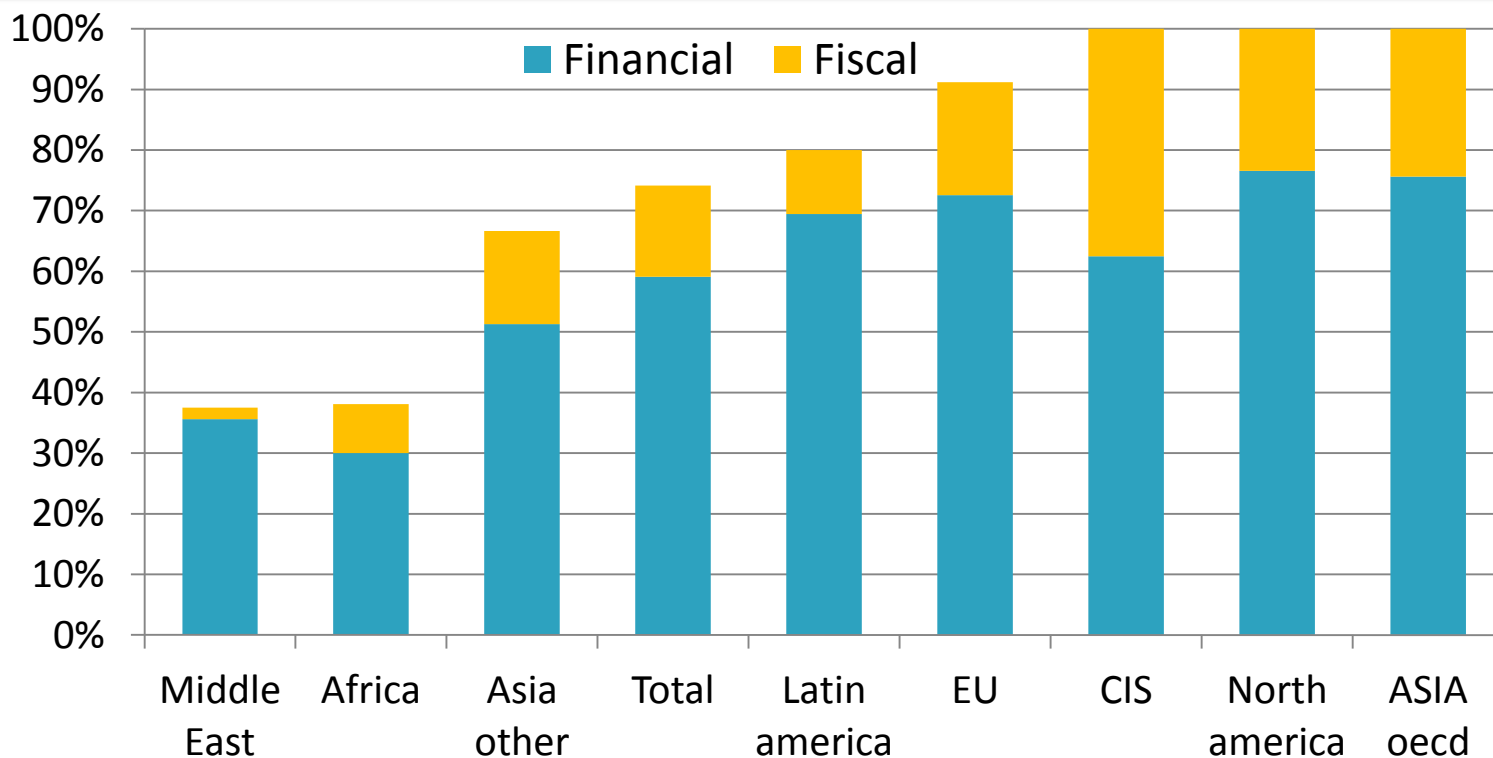
~90% of surveyed countries have implemented at least one MEPS. Norms on lamps, appliances (refrigerators, washing machines and AC) and new constructions are implemented in 80% of surveyed countries. Norms on vehicles and solar water heaters are less common.

Surveyed countries with MEPS



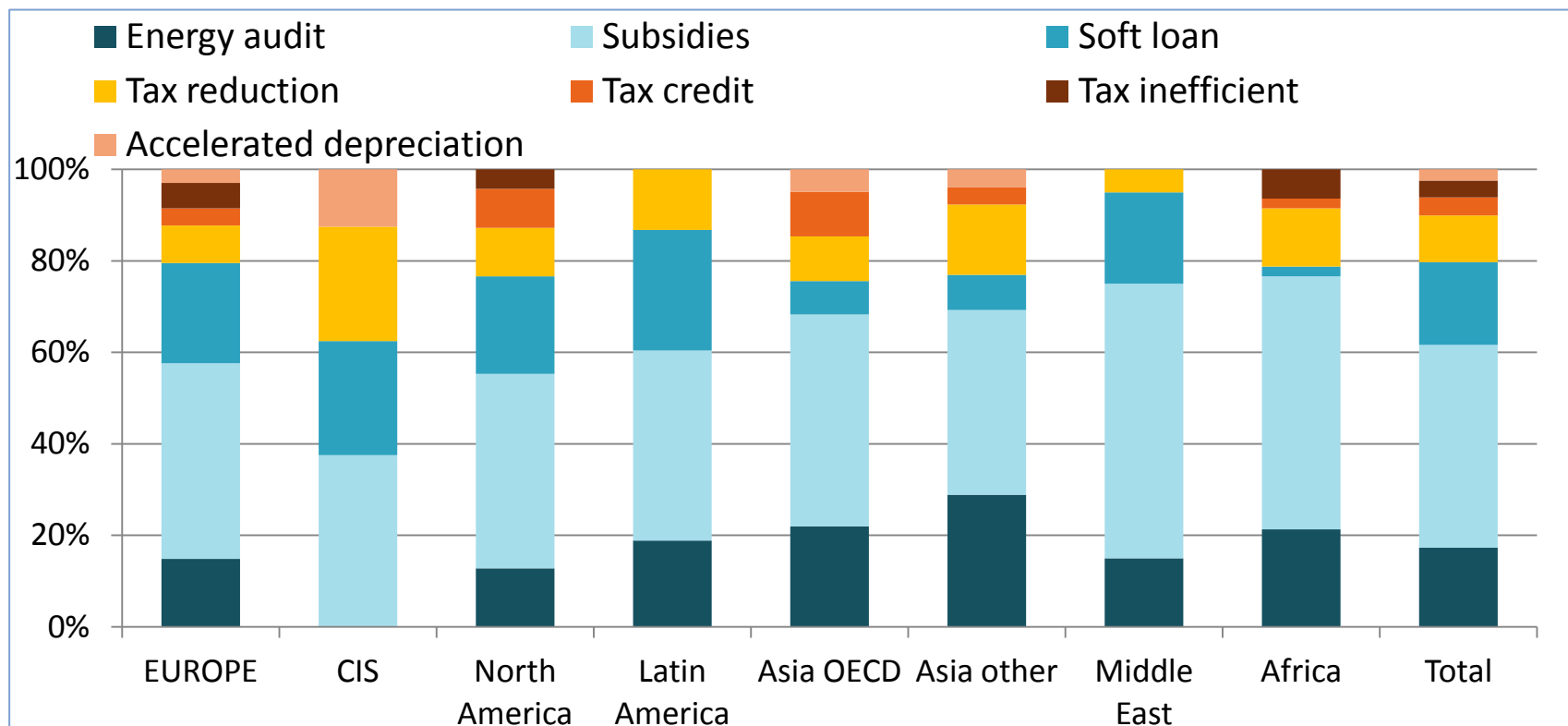
70% of surveyed countries have implemented fiscal or financial measures. Financial incentives are dominant compared to fiscal measures in all regions, fiscal measures are absent most Middle East countries

Countries with financial/fiscal measures



Among financial measures, investment subsidies are dominant and represent on average 60% of financial measures, followed by audit subsidies (~20%). Soft loans are more important in Europe/CIS, and America.

Distribution of financial measures by type and world region



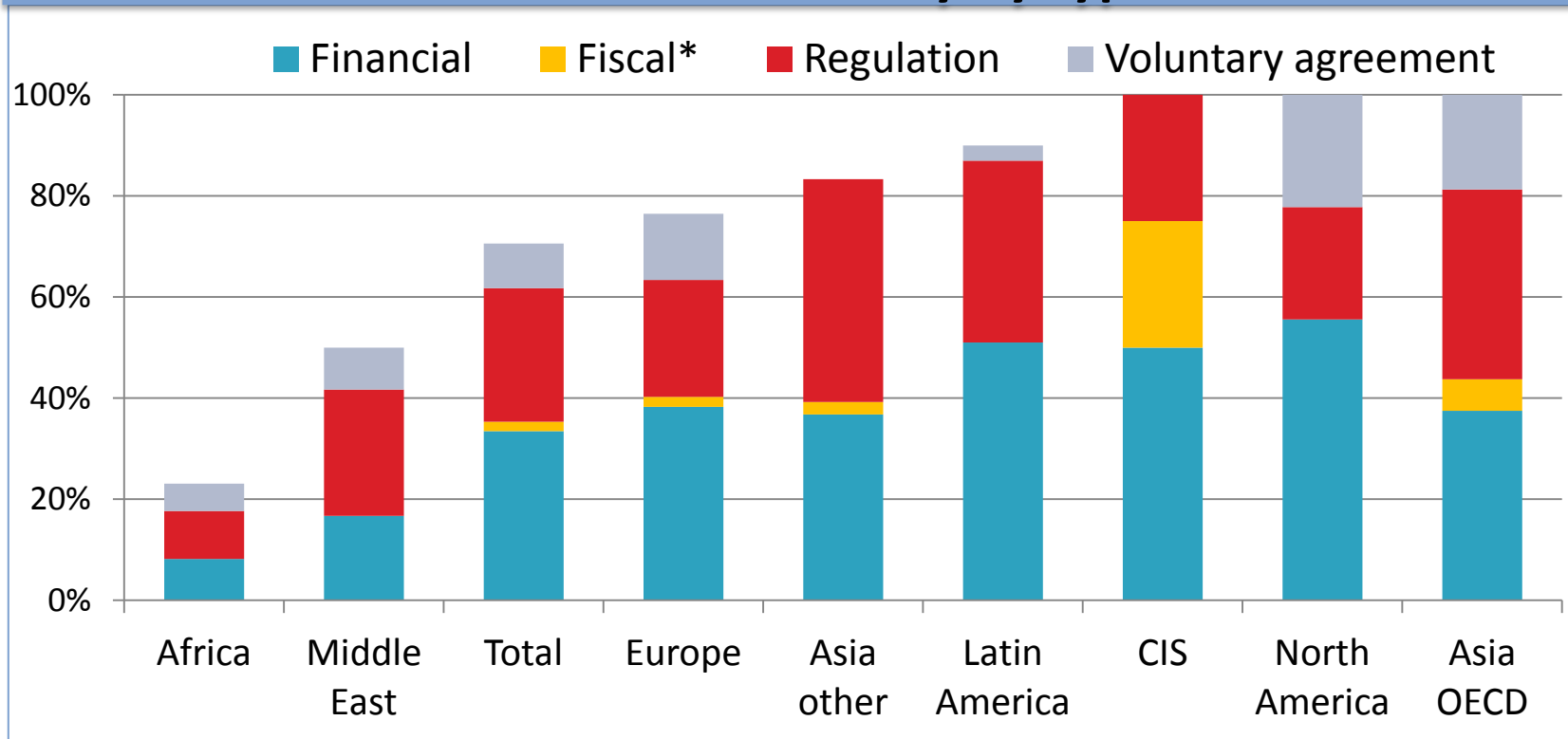
Source: WEC survey 2012

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On average 70% of countries have implemented measures in the industry sector, where incentives are dominant.

Some heterogeneities among WEC regions: regulations are for instance dominant in Asia

Measures on industry by type



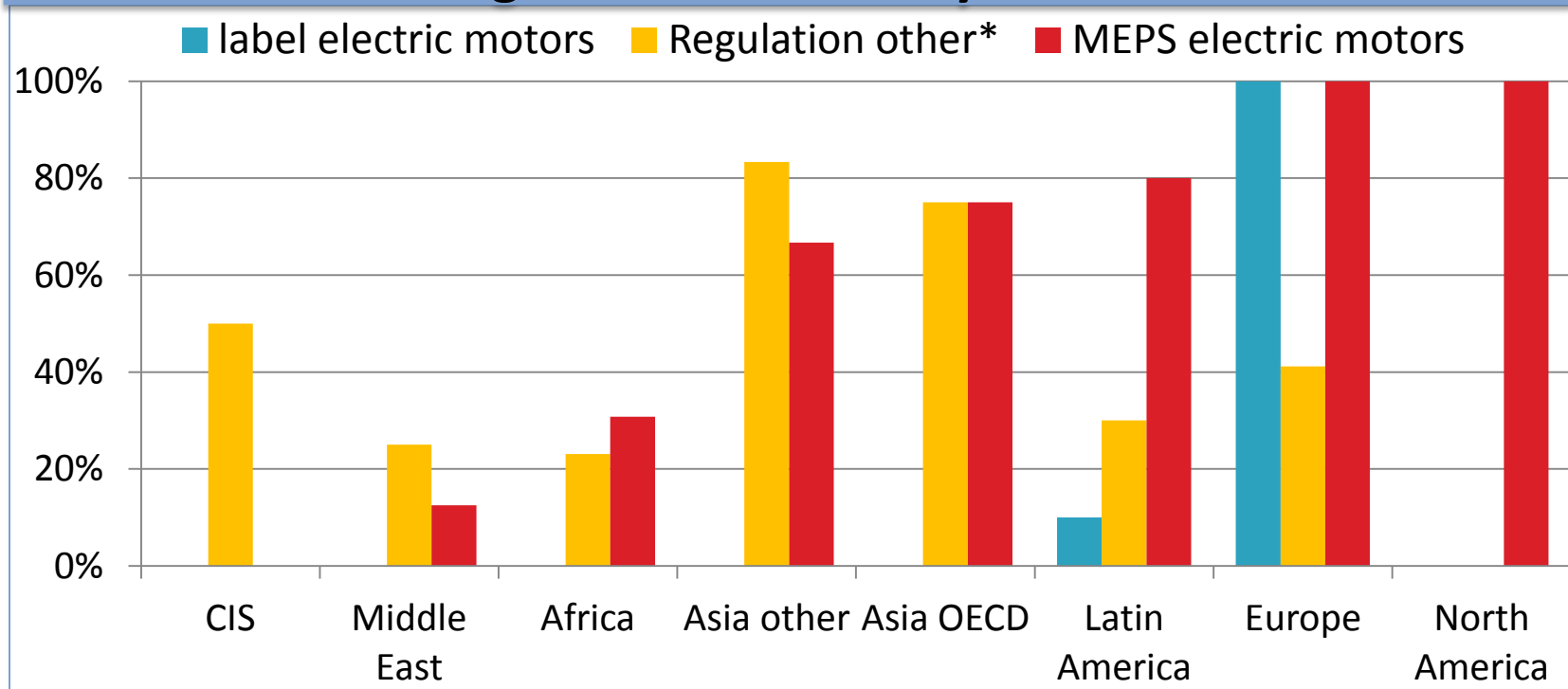
Source: WEC survey 2012

* Accelerated depreciation only

WEC - Overview of energy efficiency policies


Labels on electric motors are rarely implemented, while MEPS is on average implemented in 65% of surveyed countries

Regulation in industry sector



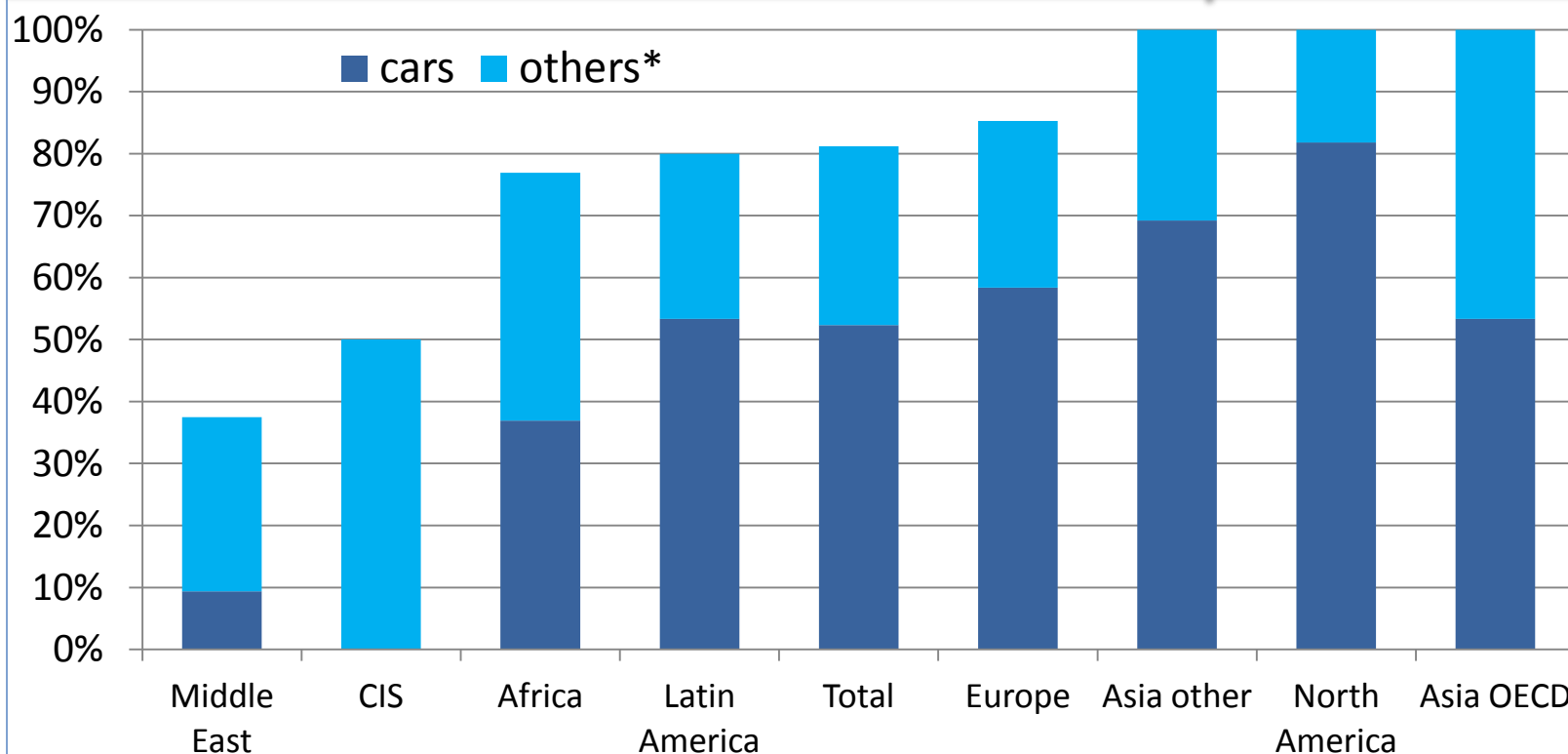
*Other: mandatory energy audits, mandatory energy managers, mandatory energy consumption reporting; mandatory energy savings plans, mandatory energy training

Source: WEC survey 2012

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Around 80% of countries have measures on transport: from 38% in Middle East to almost 100% in OECD countries. Measures targeting cars (mainly new cars specifically) are dominant : more than half of countries have implemented measures on cars (except CIS and Middle East)

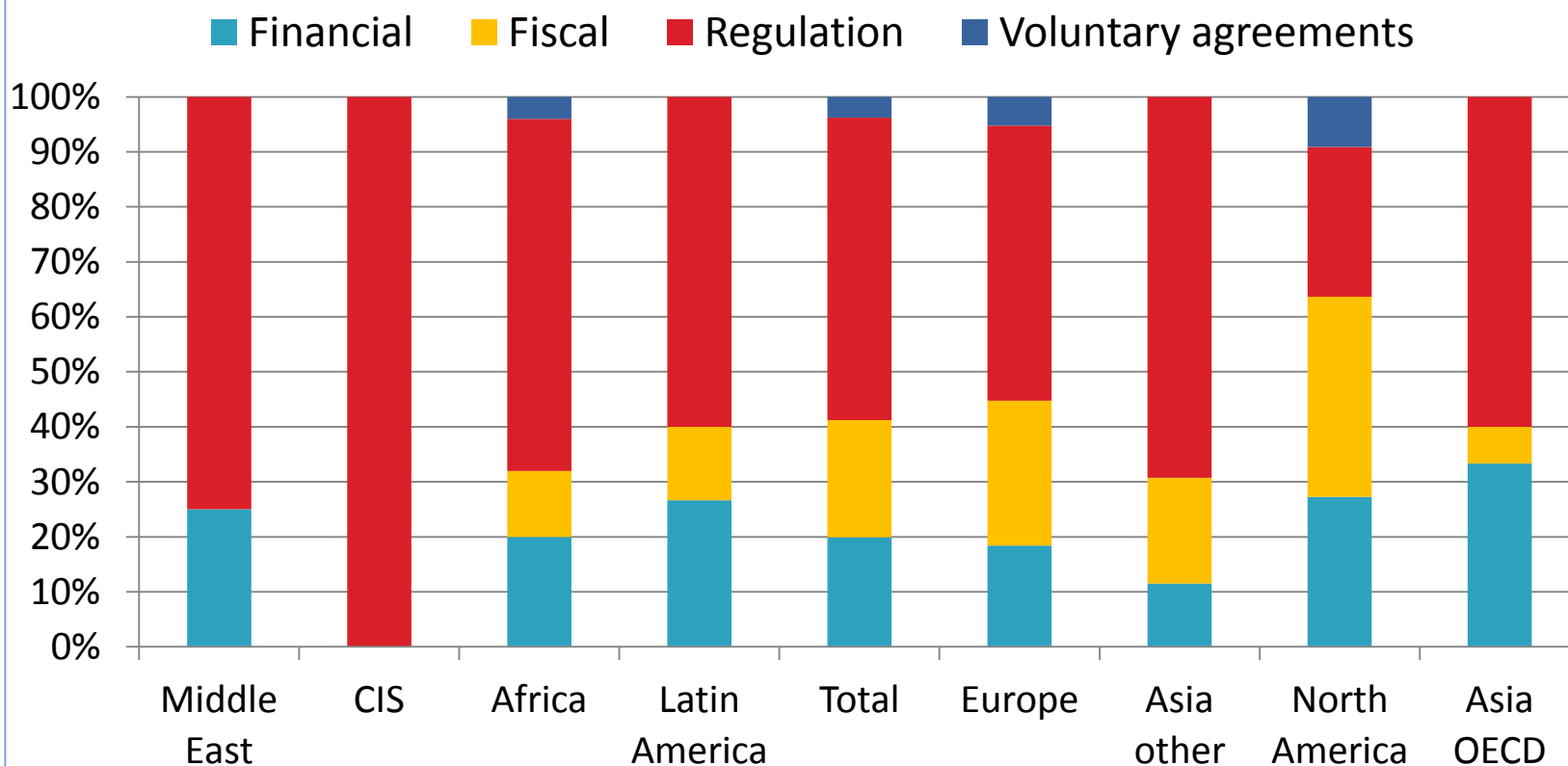
Countries with measures on transport



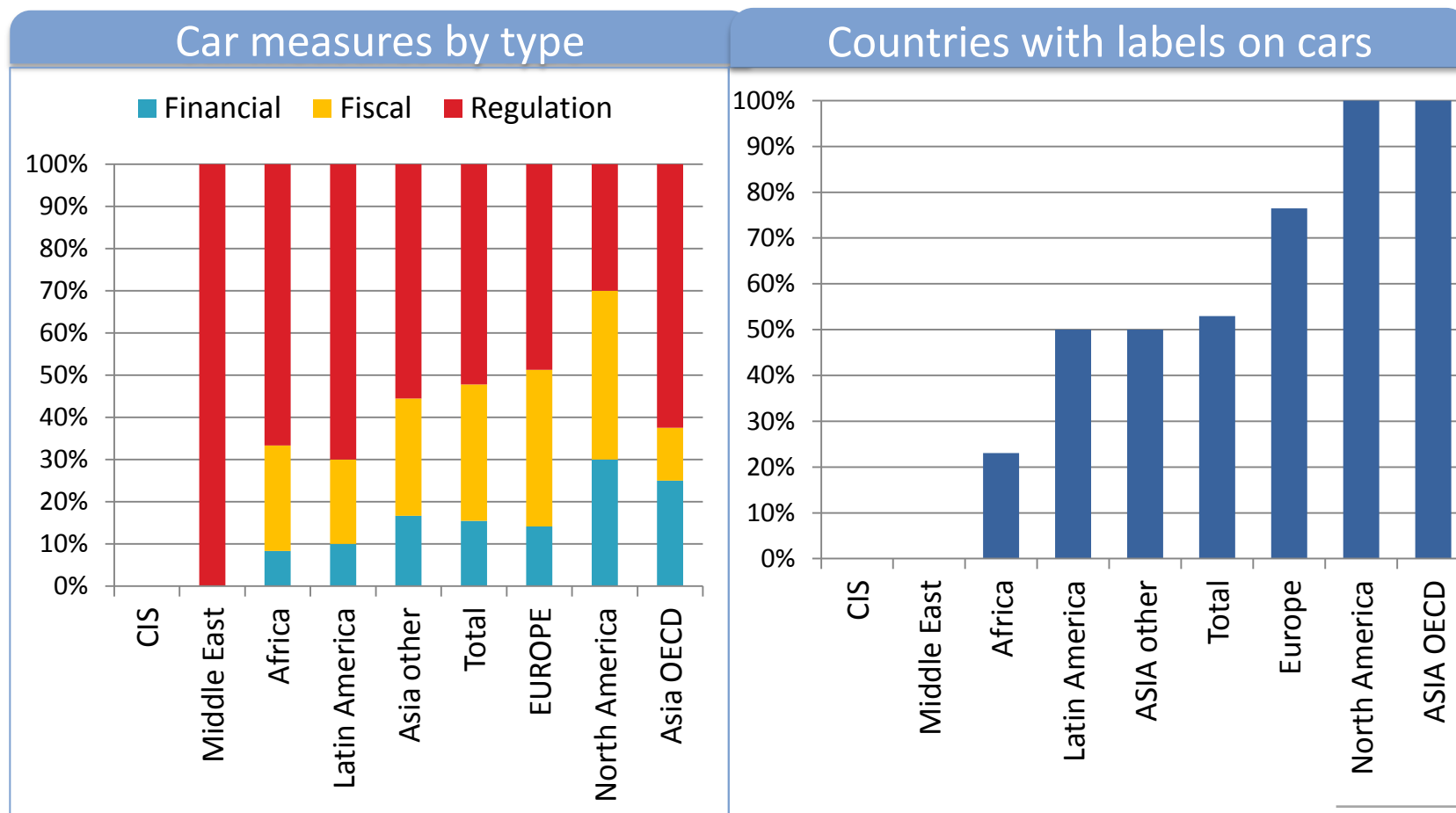
Source: WEC survey 2012

As a whole, regulation (e.g. labels on cars) are largely dominant. Financial (e.g. energy audit of transport companies or subsidies for efficient cars) and fiscal measures (e.g. tax reduction on cars) represent each on average 20%.

Distribution of transport measures by type




Regulations (e.g. labels) represent on average more than 50% of measures implemented on cars, and fiscal (e.g. car purchase tax based on CO2 performance) measures represents each around 35%.



Measures on trucks

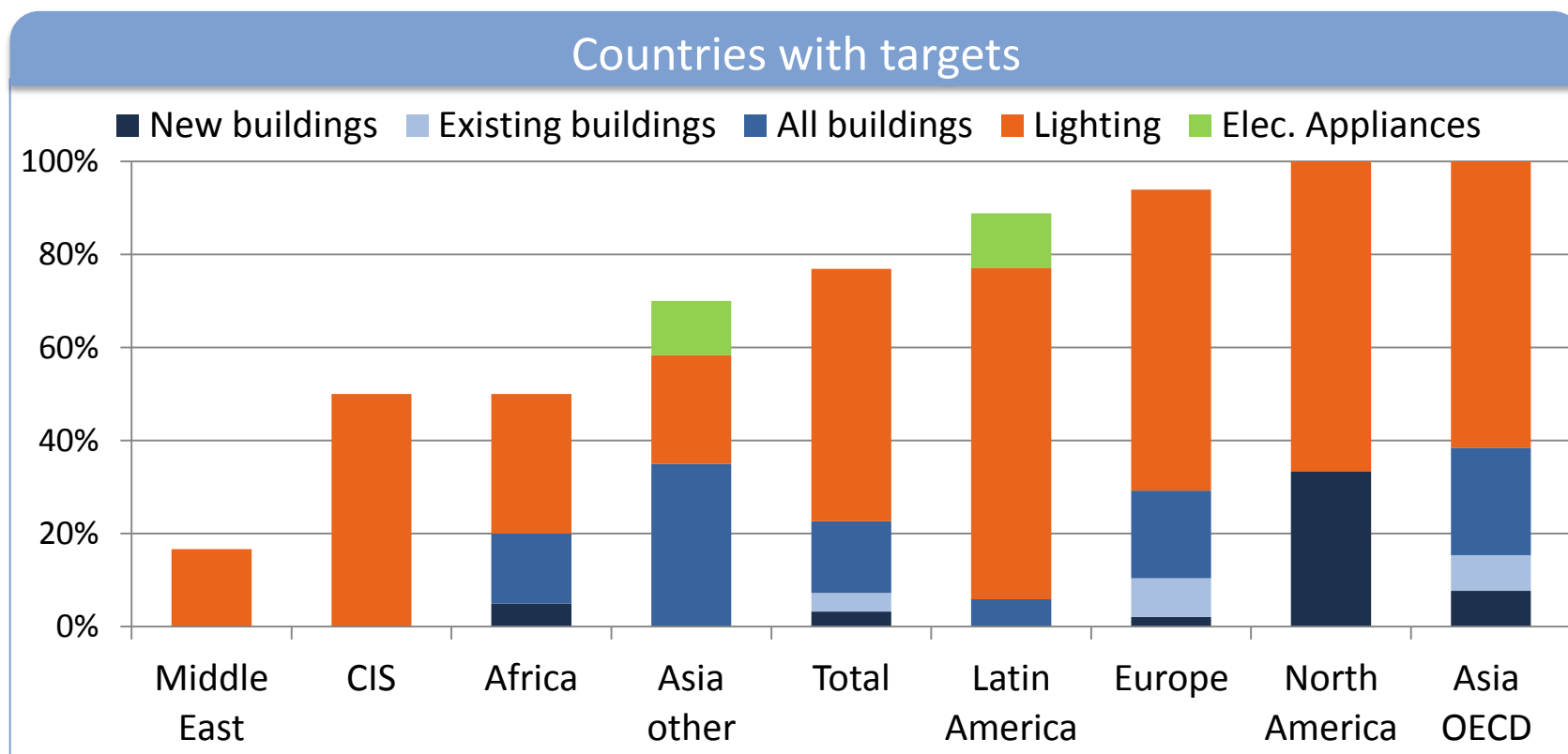
- Regulation for transport companies such as mandatory audits ; mandatory energy managers, mandatory energy consumption reporting; mandatory energy savings plans; mandatory ecodriving;
- MEPS and labelling only implemented in Japan for heavy truck; not implemented elsewhere because of the heterogeneity of vehicles;
- MEPS and labelling exist for small trucks (vans) (e.g. EU, USA, Canada) for other countries;
- Regulation for truck components: e.g. speed regulator, tyre pressure monitoring systems (e.g USA since 2007);
- Subsidies.
- Speed limits

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The banishment of incandescent lamps is widely applied (in 70% of surveyed countries)

Targets on energy efficiency of new/existing/all buildings are significant in Asia, north America and EU.

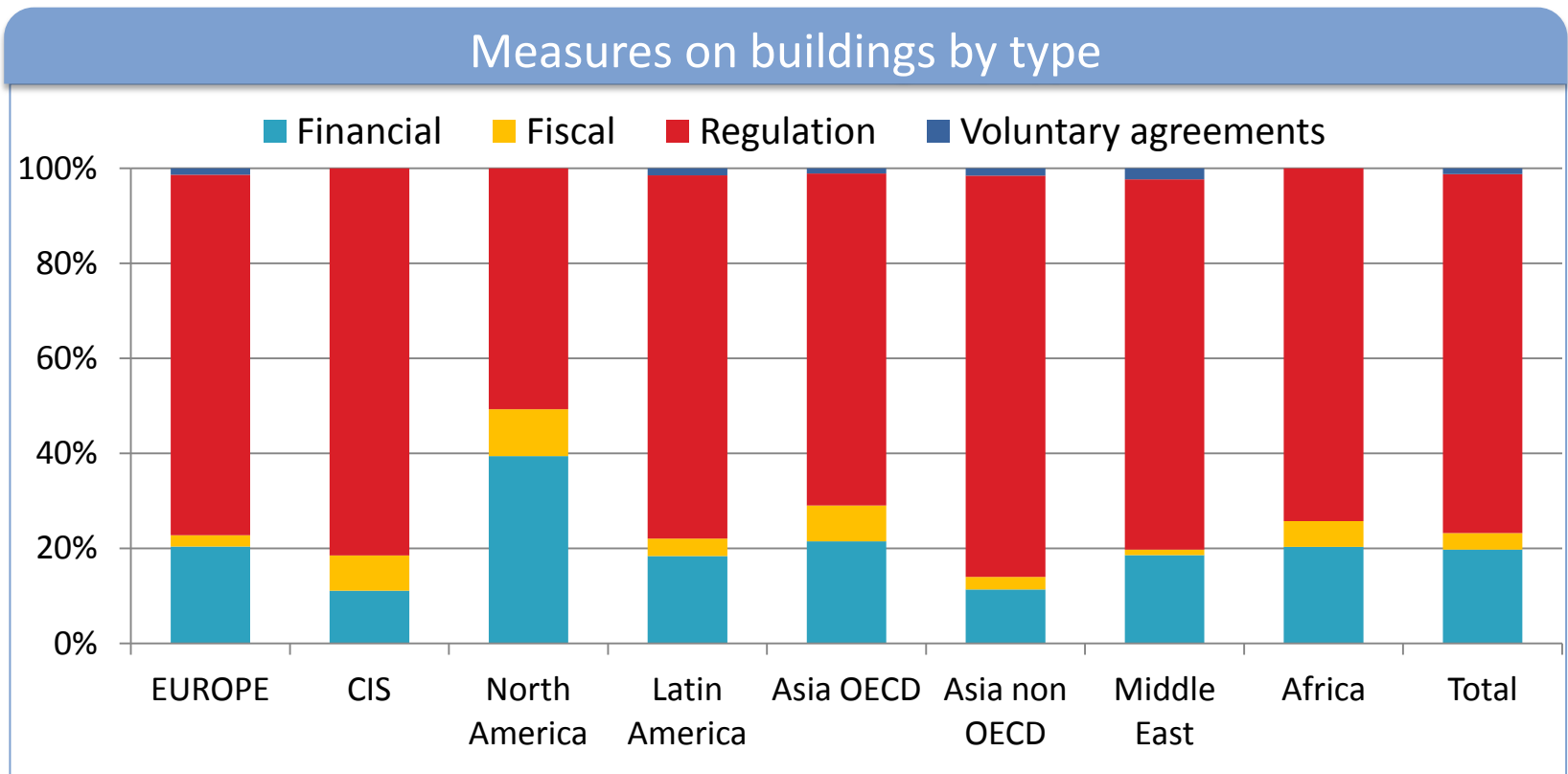
83% of targets concern residential, 13% public sector and 4% services



Source: WEC survey 2012

Regulation: dominant measures in residential and service sectors

- Labeling & MEPS (or lamp banishment) are the dominant measures followed by financial measures (subsidies and soft loans) ; Fiscal measures (e.g. tax on inefficient appliances, or tax reductions) are marginal
- Very few voluntary agreements in commercial/public buildings



Measures on thermal uses and lighting

- The most common measure is regulation, e.g. building codes.
- Labelling of buildings is a new approach that has been implemented recently in EU countries and is spreading to other regions (e.g. Chile)
- Labelling of lamps is well spread now.
- MEPS to remove the least energy-efficient lighting (incandescent lamp banishment) and HVAC products from the market → usually linked to label class
- Financial or fiscal incentives (i.e. subsidies or tax reduction) for efficient heat/ AC equipment and building retrofitting are less common in non OECD countries

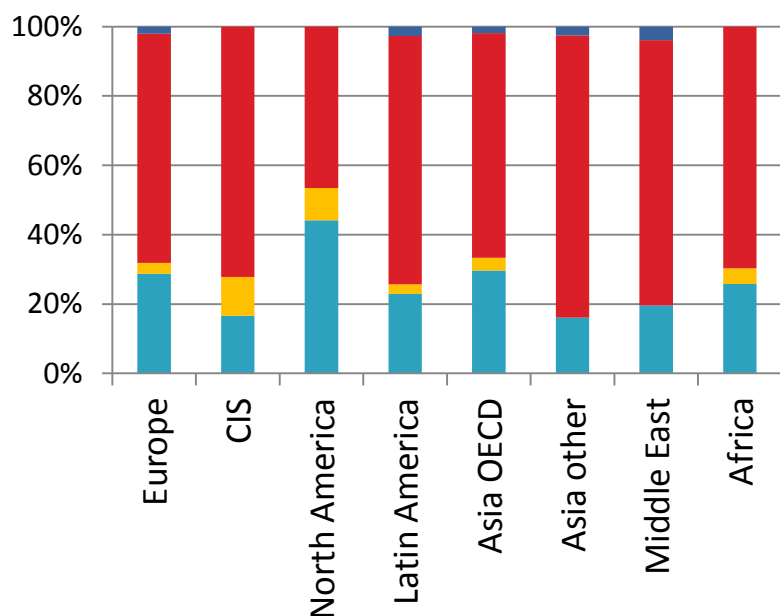


Measures aiming at improving building efficiency* in residential

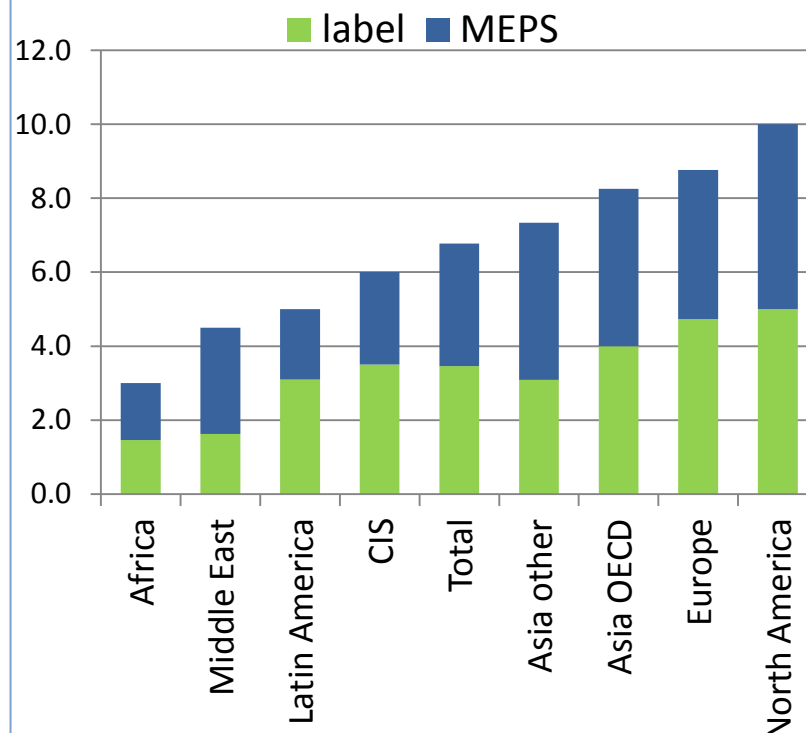
Except in North America where financial incentives are significant, regulations are dominant (e.g. building codes); on average 3 labels and 3 MEPS implemented per country.

Measures by type*

Financial Fiscal
Regulation Voluntary agreements



Number of regulation* per country

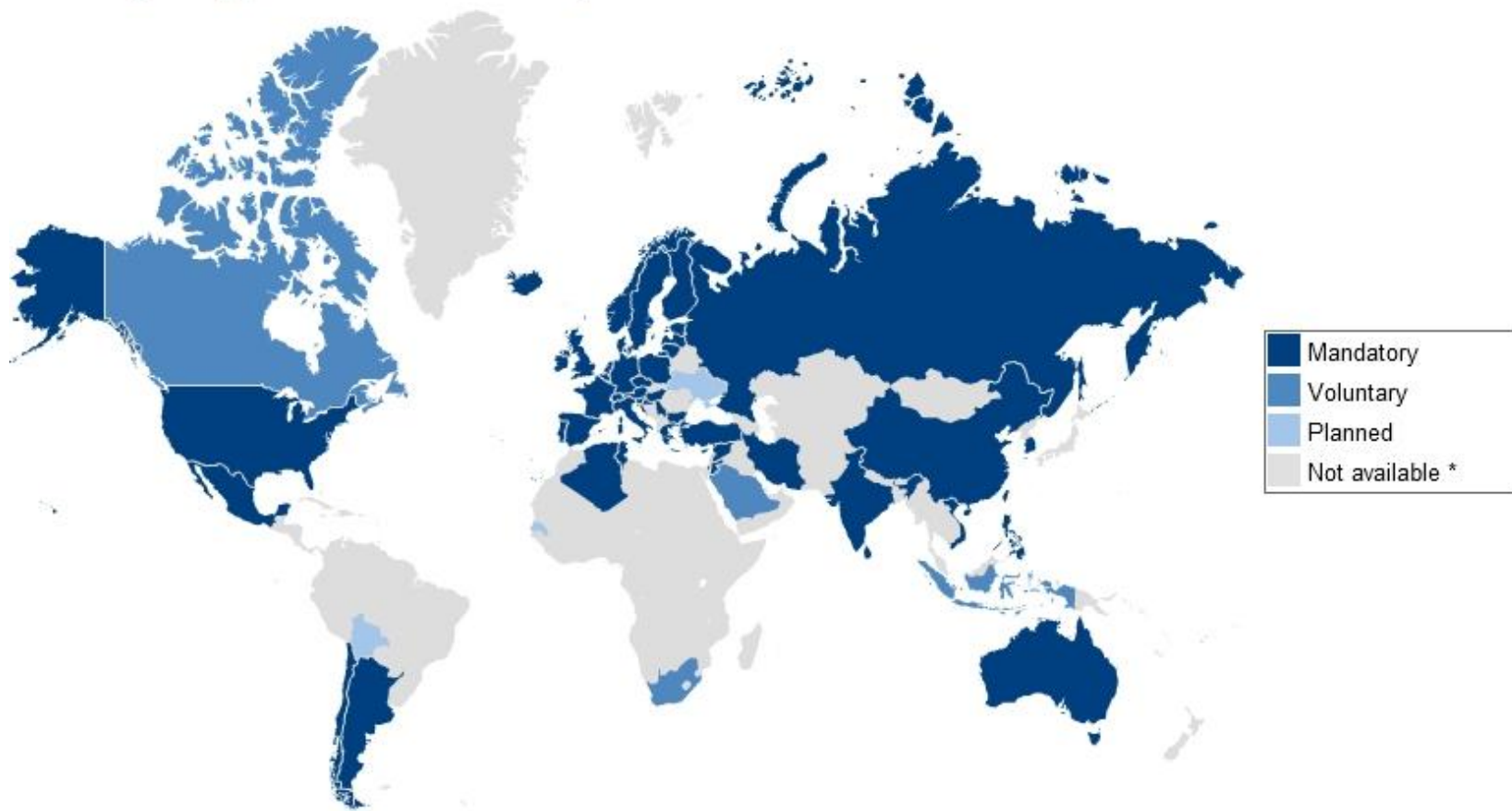


Source: WEC survey 2012

*Includes measures on buildings (residential & service), heating/AC systems

60 countries (~70% of surveyed countries) with building codes for new dwellings or buildings in service sector (90% are mandatory); in addition planned in 4 countries for dwellings and 6 countries in services

Building energy codes for new dwellings in residential

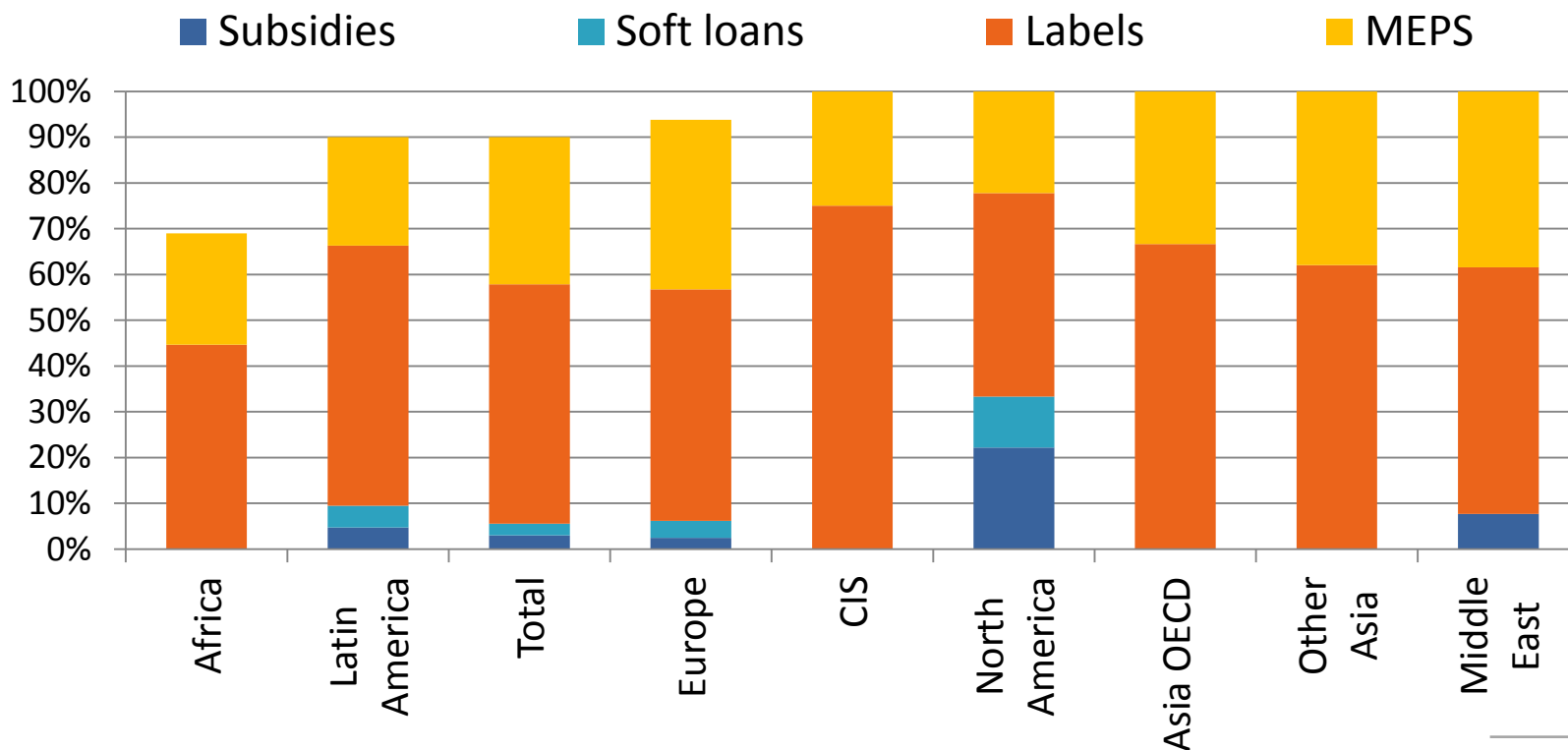


Label represents 45% of measures and MEPS 40%

However financial or fiscal incentives exist in some regions: tax reduction for efficient AC (North America , Australia) and/or scrappage of old ones (e.g. Greece).

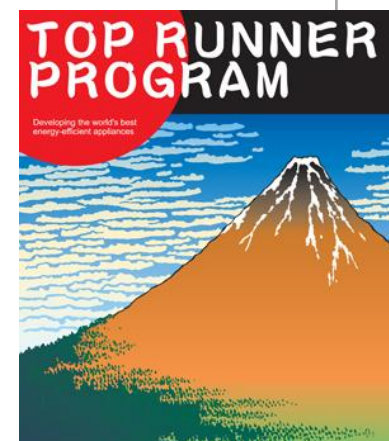
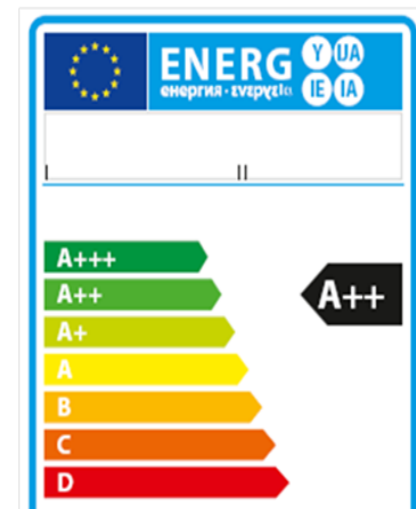
In EU countries: obligation of maintenance

Distribution of measures on AC



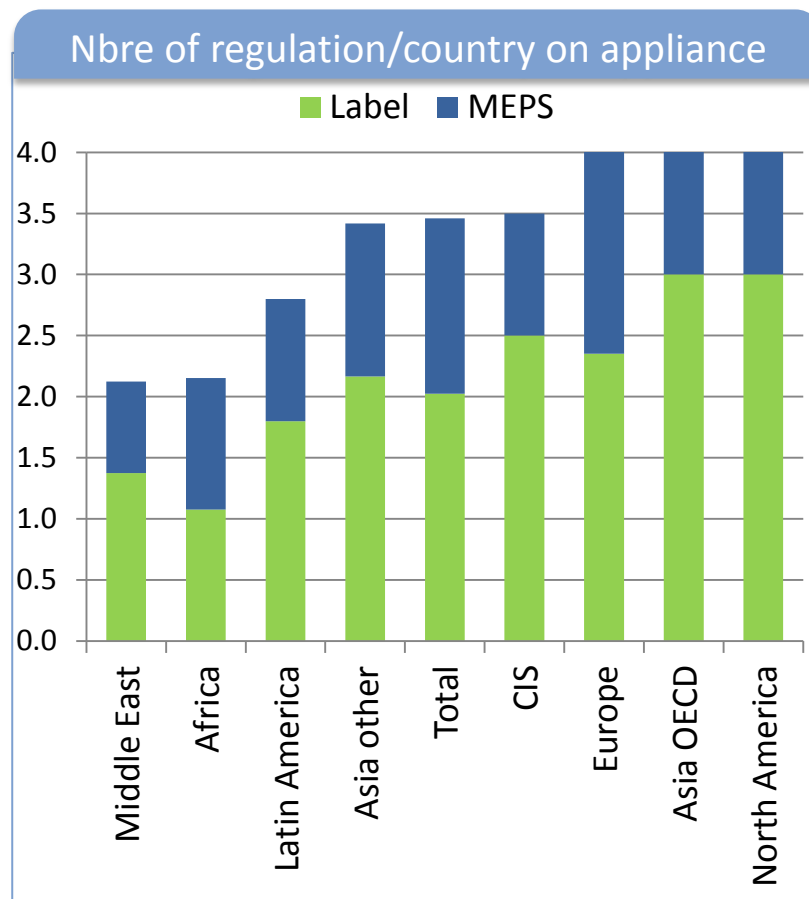
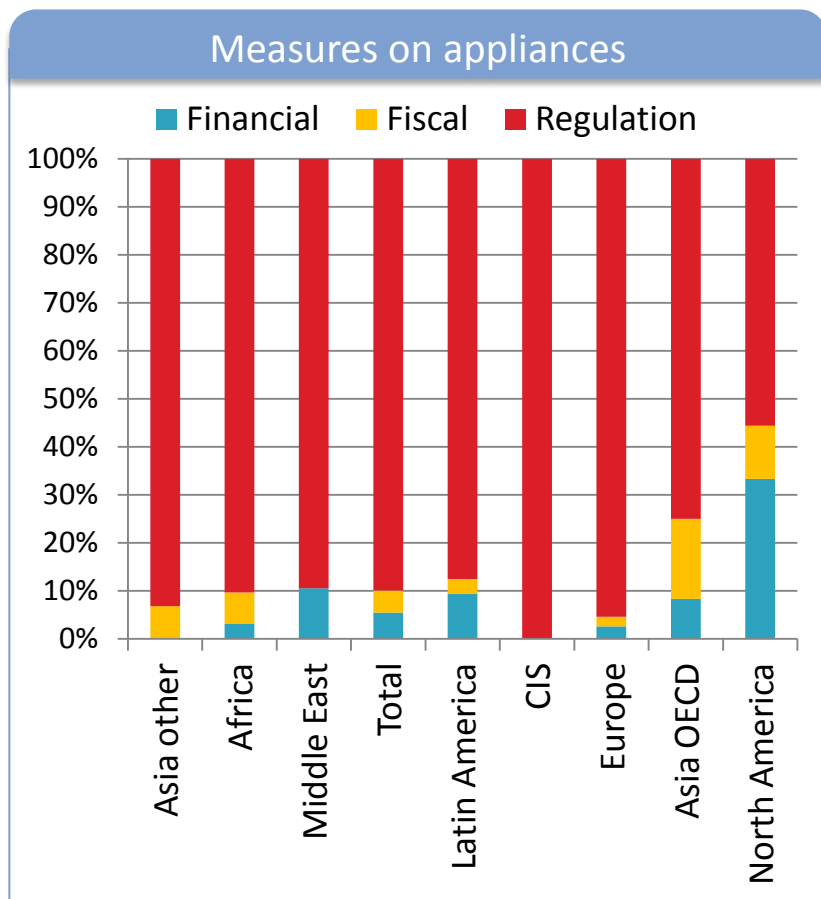
Measures on electrical appliances

- The most common measure is labelling, with an increasing number of appliances labelled (e.g. 9 in EU country, above ten 10 in Canada, China and Brazil, up to 19 in USA).
- Labelling to be effective should be mandatory which is the case in most countries → measure usually classified as regulation
- Dynamic labelling to create new efficiency class (e.g. EU with A+, A++ and A+++ to account for the fact that most of the sold appliances are already in the most efficient class (top runner programme in Japan))
- MEPS to remove the least energy-efficient products from the market → usually linked to label class
- Financial or fiscal incentives (i.e. subsidies or tax reduction) for efficient appliances are also quite common



Measures aiming at improving appliance* efficiency

Mandatory minimum energy efficiency requirement and mandatory energy labelling are the most important legislative measures addressing electrical appliances



Source: WEC survey 2012

WEC - Overview of energy efficiency policies

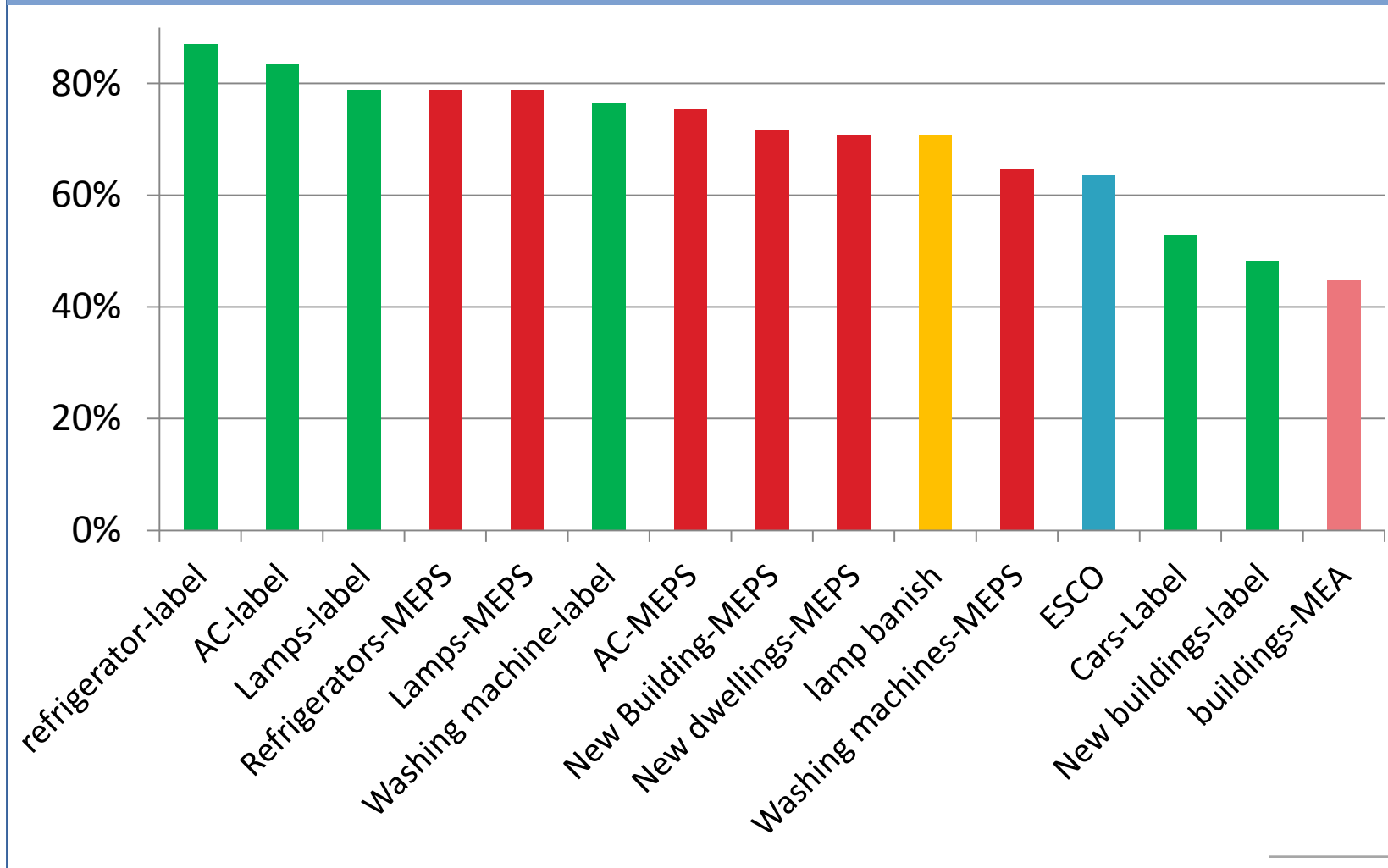
*Includes measures on refrigerator, washing machine, office equipment and other appliances

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WEC-Top 15 of energy efficiency measures

Labels & MEPS on household appliances are the most frequent measures...

WEC survey on energy efficiency policies: frequency of measures



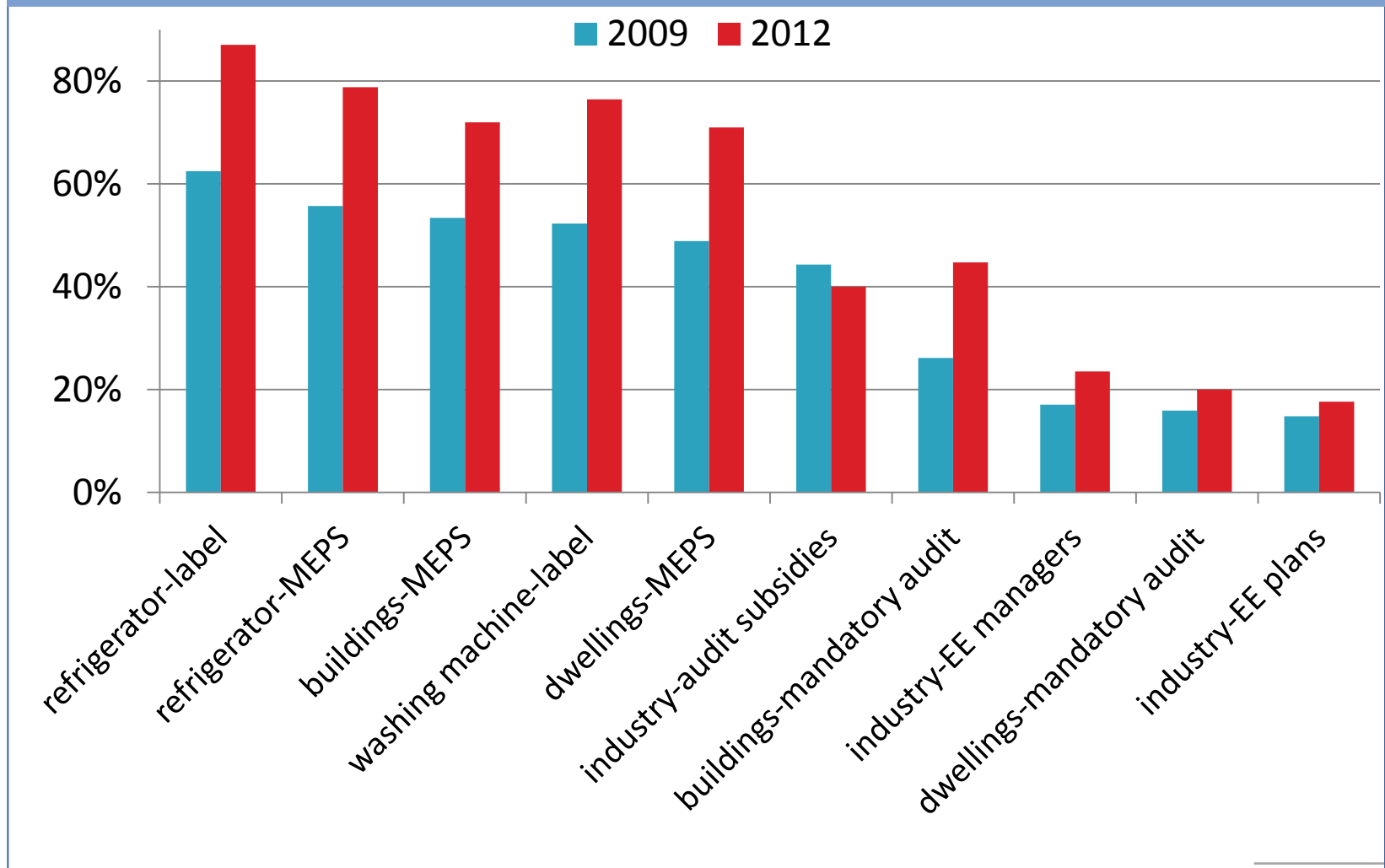
Source: WEC survey 2012 42

Building for non residential, dwelling for residential; MEA= mandatory energy audit

Trend in top 10 measures

And are continuously increasing across time

Surveyed countries on energy efficiency policies - frequency of measures



Source: WEC survey 2012

1. Incentive prices

- Energy prices should be adjusted to long term marginal cost (growing in the future) to give the right signals to consumers ...
- But need appropriate measures to limit budget constraints for low income households.

2. Sustainable institutional support for policies and involvement

- Need for programmes with medium to long term, overall and sectoral quantitative targets and energy efficiency laws to give long-term signals to market actors and to have a sustainable regulatory framework: avoid stop and go

3. Innovative financing to support consumers at a limited cost for the public budget

- ✓ Dedicated and relevant budget for energy efficiency policies
- ✓ Energy efficiency funds (revolving, guarantee...) for EE investments
- ✓ Grouping of projects for multilateral funding (e.g. CDM projects)
- ✓ Energy savings obligations for utilities
- ✓ Public private partnership (e.g. ESCO's)
- ✓ Combined tax and subsidy schemes (e.g. "bonus malus")
- ✓ Zero or very low interest loans

4. Improving quality of EE equipment, services and practices to give confidence to consumers and avoid negative feedbacks

- ✓ Certification of equipment, installers, auditors
- ✓ Quality control of locally produced and imported products, harmonisation of testing procedures for certification
- ✓ Economic support conditioned to quality labels

5. Regulations should be regularly strengthened, enforced and expanded

- ✓ Dynamic revision of MEPS for buildings and equipment embedded in regulations
- ✓ Expand MEPS to a larger set of appliances
- ✓ Compliance and Random controls integrated in regulations

6. For each end-use , address all steps of the deployment process of energy efficient equipment /actions with packages of measures rather than single measures

- ✓ Combination of different measures (e.g. information & communication, regulations, subsidies, soft loans, training, certification);
- ✓ Complementary or alternative measures

7. Better address the situation of less developed countries

- ✓ Regulations on second-hand appliances and cars (including ban)
- ✓ Adapted incentives for efficient biomass stoves and CFL
- ✓ R&D in improved biomass stoves and solar cookers
- ✓ Capacity building

8. Address behaviours as much as technology

- ✓ Study and take into account the impact of behaviours
- ✓ Develop technologies that can limit the impact of inefficient behaviours (e.g. speed limiters, programme set to saving modes)
- ✓ Promote informative billing and in house display devices
- ✓ Improve communication tools
- ✓ Develop training activities

9. Need to monitor achievements and impacts of measures

- ✓ Develop data collection system for end-uses
- ✓ Develop energy efficiency indicators to monitor progress achieved on a yearly basis
- ✓ Evaluate the measures that work and do not work to better tune them; evaluate rebound effects, free rider effects

10. Enhance international and regional cooperation : towards regional policies and programmes

- ✓ Regional certification and international standard
- ✓ Regional benchmarking
- ✓ Regional testing facilities
- ✓ Exchange of experience on measures
- ✓ Common and harmonised data collection at regional levels
- ✓ Encourage institutional cooperation