



energy

Department:
Energy
REPUBLIC OF SOUTH AFRICA

What are the steps? Determining the current status of technologies and policies

Buildings: Maxine Jordan, IEA and Ian Hamilton, UCL Energy Institute

Pretoria, Tuesday 15th October 2019

Buildings energy efficiency sessions in partnership with:

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UCL **ENERGY**
INSTITUTE



Energy Efficiency Training Week: Buildings programme

1. Where to start: Energy use in buildings
2. Where to start: Energy efficiency potential in buildings
Special session: GlobalABC Regional Roadmaps
3. Toolkit: Energy efficient building design technologies
4. Toolkit: Energy efficient building system technologies
Special session: Green Building in Africa – *Elizabeth Chege, KGBS*
Special session: The GlobalABC Africa Roadmap for buildings and construction
- 5. What are the steps? Determining the current status of policies**
6. Toolkit: Energy efficiency policies and target setting *with guest speaker: Hlompho Vivian, GBC SA*
7. What are the steps? Implementing codes and standards
8. What are the steps? Building operations and procurement *with guest speaker: Christelle Van Vuuren, Carbon Trust*
Special session: The multiple benefits of energy efficiency
9. Did it work? Evaluation and energy efficiency indicators
Special session: Financing energy efficiency in buildings
10. Buildings quiz

Energy Efficiency Training Week: Buildings

5. What are the steps? Determining the current status of policies

Trainers: Maxine Jordan, IEA

Purpose: To teach the fundamentals of how energy efficiency targets and policies can be used in tandem to reduce energy use in buildings and meet energy and development goals.

Scenario: There has been a change of government and the incoming government wants to plan a range of options for interventions to support a rapid increase in energy efficiency in buildings.

Discussion question: How do you identify the status of current policies and determine what the gaps are?

Why do we need policies

Bridging the gap

Enable market transformation

Why do we need policies?

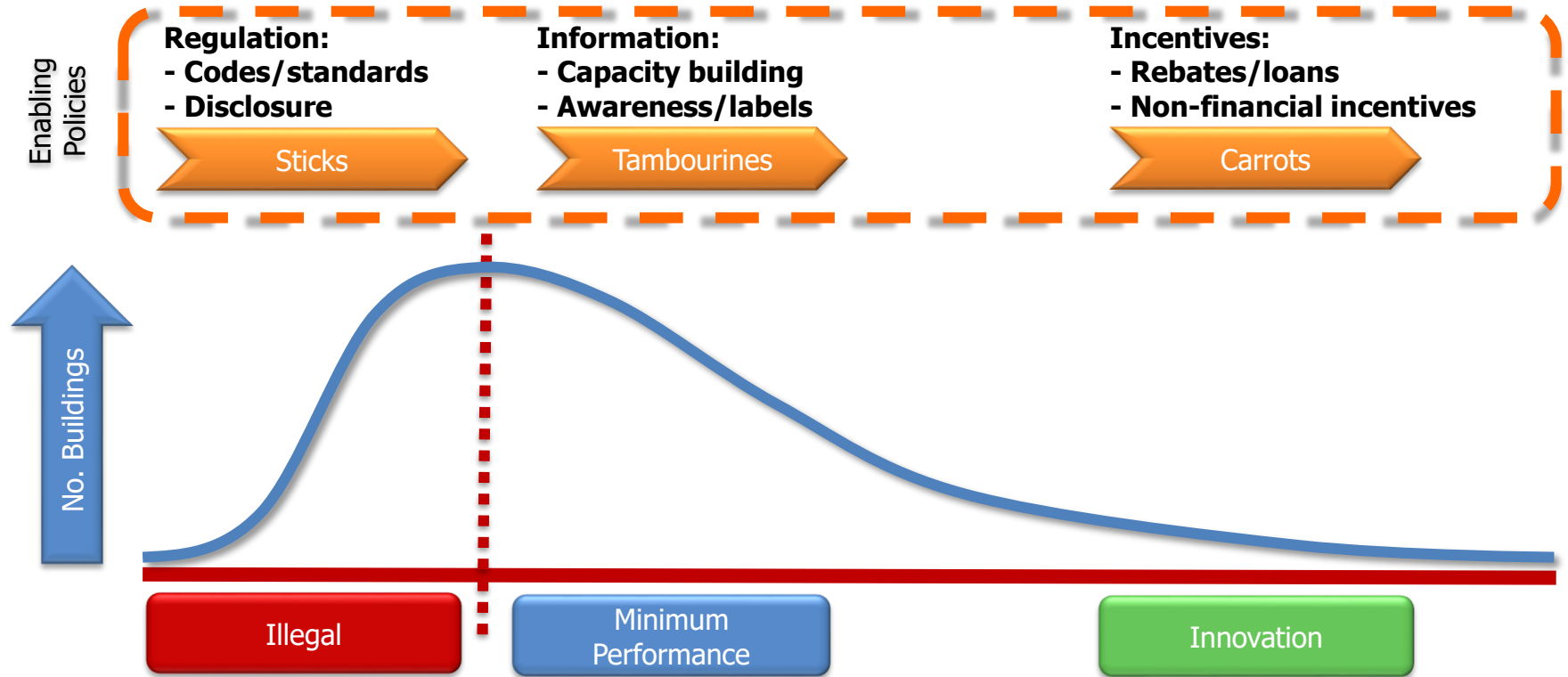


“What if we don’t change at all ...
and something magical just happens?”

Why do we need policies? Bridging the efficiency gap



Why do we need policies? Market transformation



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Energy efficiency regulations

Mandatory regulation

- **Codes:** regulation for energy efficiency and sustainability for a whole building.
- **Standards:** regulation for individual products or services, often referenced within a building code for individual building components.
- **Mandatory disclosure:** regulation that requires organisations or individuals to report or disclose how their building is performing, such as disclosing the energy performance certificate or energy usage.

Obligations

- **Utility obligations:** rules for regulated utilities that enable increasing investment in energy efficiency and passing the costs system-wide in the energy prices
- **Public procurement:** rules for government organisations to purchase products and services that meet certain criteria, such as energy performance or certification.

Energy efficiency information

Data and information

- **Energy performance certificates:** documentation of basic building information plus energy performance
- **Building passport:** documentation of most buildings data and information, including basic information, construction materials, systems, renovations and energy use.

Awareness

- **Labels and branding:** easily identifiable visual that enables consumers to recognise product or service as efficient.

Capacity building

- **Education and training:** learning efforts to increase the knowledge of building sector professionals or general population.
- **Labour certification:** searchable documentation of professional expertise in delivering energy efficiency.

Energy efficiency incentives

Non-financial incentives

- **Time:** expedited approval for permits
- **Scope:** increased floor area, building height or number of floors

Financial incentives

- **Finance:** enabling private investment ,including through loan guarantees, preferential loan terms or increased access to funds
- **Direct fiscal credit:** improving the cost of energy efficiency to consumers through rebates, tax credits and discounts

Urban Planning

New
BuildingsBuilding
RetrofitsBuilding
Operations

Systems

Materials

Resilience

Clean
EnergyGlobal Alliance
for Buildings and
Construction

Policies

		Baseline status (2019)	Short-term (2030)	Medium-term (2040)	Long-term (2050)
Provide minimum standards for the energy efficiency and emissions of building retrofits.	Building codes (countries with no codes)	__% countries with no building codes	Achieve: __% mandatory code Aspire: __% mandatory code	Achieve: __% mandatory code Aspire: __% net zero ready code	Achieve: __% net zero ready code Aspire: __% net zero ready code
	Building codes (countries with voluntary or mandatory codes)	__% countries with voluntary or mandatory codes	Achieve: 50% net zero ready code Aspire: 50% net zero code	Achieve: 75% net zero ready code Aspire: 75% net zero code	Achieve: 100% net zero ready code Aspire: 100% net zero code
Allows the rating of building performance to enable comparison between buildings.	Building certification	__% countries with voluntary or mandatory certification	Achieve: 20% mandatory Aspire: 50% mandatory	Achieve: 50% mandatory Aspire: 70% mandatory	Achieve: 70% mandatory Aspire: 100% mandatory
Enables tracking and storing information about the building, materials, systems, energy consumption, etc...	Building passports	Isolated and voluntary information collection	Achieve: 40% building passports Aspire: 50% building passports	Achieve: 70% building passports Aspire: 80% building passports	Achieve: 100% building passports Aspire: 100% building passports
Financial support such as loans to enable private investment in the construction of new low energy/carbon buildings.	Fiscal incentives	Minimal financial support available for low energy/ carbon buildings	Achieve: 5% incentive available Aspire: 20% incentive available	Achieve: 10% incentive available Aspire: 30% incentive available	Achieve: 20% incentive available Aspire: 60% incentive available
Non-financial support such as expedited permits or increased floor area allowances to encourage construction of low energy/carbon buildings.	Non-fiscal incentives	Minimal incentives for low energy/ carbon buildings	Achieve: 5% non-fiscal incentives Aspire: 33% non-fiscal incentives	Achieve: 15% non-fiscal incentives Aspire: 66% non-fiscal incentives	Achieve: 30% non-fiscal incentives Aspire: 100% non-fiscal incentives

Policies

		Baseline status (2019)	Short-term (2030)	Medium-term (2040)	Long-term (2050)
Provide minimum standards for the energy efficiency and emissions of new buildings.	Building codes	__% countries with no building codes for retrofits	Achieve: __% mandatory code Aspire: __% mandatory code	Achieve: __% net zero ready code Aspire: __% net zero codes	Achieve: __% net zero ready code Aspire: __% net zero codes
Allows the rating of building performance to enable comparison between buildings.	Building certification for existing buildings	__% countries with voluntary or mandatory certification for existing buildings	Achieve: __% mandatory Aspire: __% mandatory	Achieve: __% mandatory Aspire: __% mandatory	Achieve: __% mandatory Aspire: __% mandatory
Enables tracking and storing information about the building, materials, systems, etc	Building passports	Isolated and voluntary information collection	Achieve: __% building passports Aspire: __% building passports	Achieve: __% building passports Aspire: __% building passports	Achieve: __% building passports Aspire: __% building passports
Evaluate policies based on life-cycle assessment including extending the life of buildings and their components	Circular economy	Minimal circular economy decisions	Achieve: __% plan circular economy Aspire: __% plan circular economy	Achieve: __% plan circular economy Aspire: __% plan circular economy	Achieve: __% plan circular economy Aspire: __% plan circular economy
Financial or non-financial support to encourage investment in the renovation of existing buildings.	Incentives	Leading jurisdictions provide incentives	Achieve: __% non-fiscal incentives Aspire: __% fiscal and non-fiscal	Achieve: __% non-fiscal incentives Aspire: __% fiscal and non-fiscal	Achieve: __% non-fiscal incentives Aspire: __% fiscal and non-fiscal

Policies

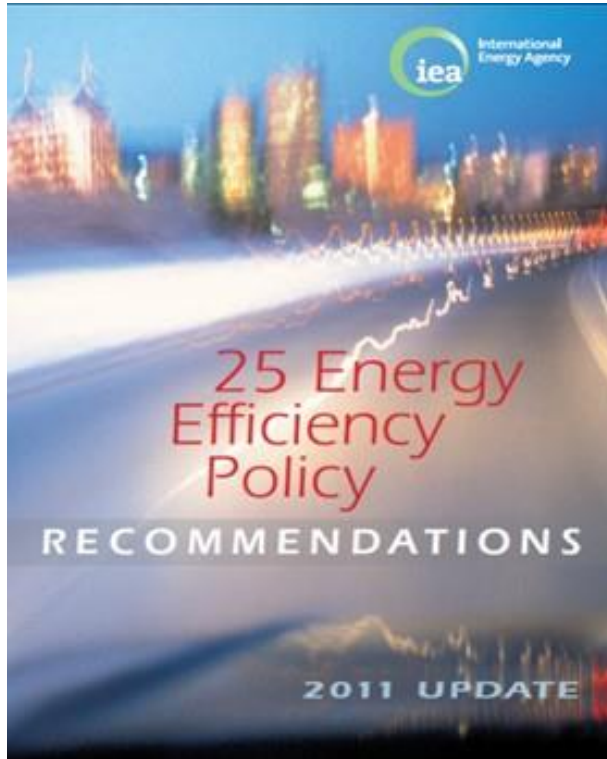
		Baseline status (2019)	Short-term (2030)	Medium-term (2040)	Long-term (2050)
Strengthen the standards of equipment and appliances for higher performance requirements	Minimum performance standards	Limited minimum performance standards	Achieve: __% mandatory Aspire: __% mandatory	Achieve: __% mandatory Aspire: __% mandatory	Achieve: __% mandatory Aspire: __% mandatory
Product labels improve consumer's decision making encouraging energy efficient products in the market	Information and awareness	Minimal consumer awareness	Achieve: __% labels & education Aspire: __% awareness	Achieve: __% labels & education Aspire: __% awareness	Achieve: __% labels & education Aspire: __% awareness
Increasing research funding enables development of cost effective energy efficient technologies	Research and development	Mission Innovation goal of doubling investment	Achieve: __% more investment Aspire: __% more investment	Achieve: __% more investment Aspire: __% more investment	Achieve: __% more investment Aspire: __% more investment
Support phase out of unsustainable products by including bulk procurement of sustainable products or minimum performance specifications	Procurement and phase out	Leading jurisdictions procure sustainably	Achieve: __% green procurement Aspire: __% green procurement	Achieve: __% green procurement Aspire: __% green procurement	Achieve: __% green procurement Aspire: __% green procurement
Financial or non-financial support to encourage investment in sustainable appliances and systems	Incentives	Leading jurisdictions provide incentives for the purchase of efficient goods	Achieve: __% non-fiscal incentives Aspire: __% fiscal and non-fiscal	Achieve: __% non-fiscal incentives Aspire: __% fiscal and non-fiscal	Achieve: __% non-fiscal incentives Aspire: __% fiscal and non-fiscal

Policy Recommendations

25 Energy Efficiency Policy Recommendations



Energy efficiency policy recommendations



Buildings

- 6** Mandatory building codes and MEPS
- 7** Net-zero energy consumption in buildings
- 8** Improved energy efficiency in existing buildings
- 9** Building energy labels or certificates
- 10** Energy performance of building components and systems

Cross-sectoral



Buildings



Appliances and equipment



Lighting



Transport



Industry



Energy utilities



25 energy efficiency policy recommendations

Cross-sectoral

1. Energy efficiency data collection and indicators
2. Strategies and action plans;
3. Competitive energy markets with appropriate regulation;
4. Private investment in energy efficiency
5. Monitoring, enforcement and evaluation of policies and measures.

Buildings

6. Mandatory building energy codes and minimum energy performance requirements;
7. Aiming for net zero energy consumption in buildings;
8. Improving the energy efficiency of existing buildings;
9. Building energy labels or certificates;
10. Improved energy performance of building components and systems.

Appliances and Equipment

11. Mandatory MEPS and labels for appliances and equipment;
12. Test standards and measurement protocols for appliances and equipment
13. Market transformation policies for appliances and equipment

Lighting

14. Phase-out of inefficient lighting products and systems;
15. Energy efficient lighting systems

Transport

16. Mandatory vehicle fuel efficiency standards;
17. Measure to improve vehicle fuel efficiency;
18. Fuel-efficient non-engine components
19. Improved vehicle operational efficiency through Eco-driving and other measures .
20. Transport system efficiency

Industry

21. Energy Management in industry;
22. High efficiency industrial equipment and systems;
23. Energy efficiency services for small and medium enterprises;
24. Complementary policies to support industrial energy efficiency

Energy utilities

25. Energy Utilities and end-use energy efficiency.

Energy efficiency policy recommendations

Mandatory building energy codes and minimum energy performance standards

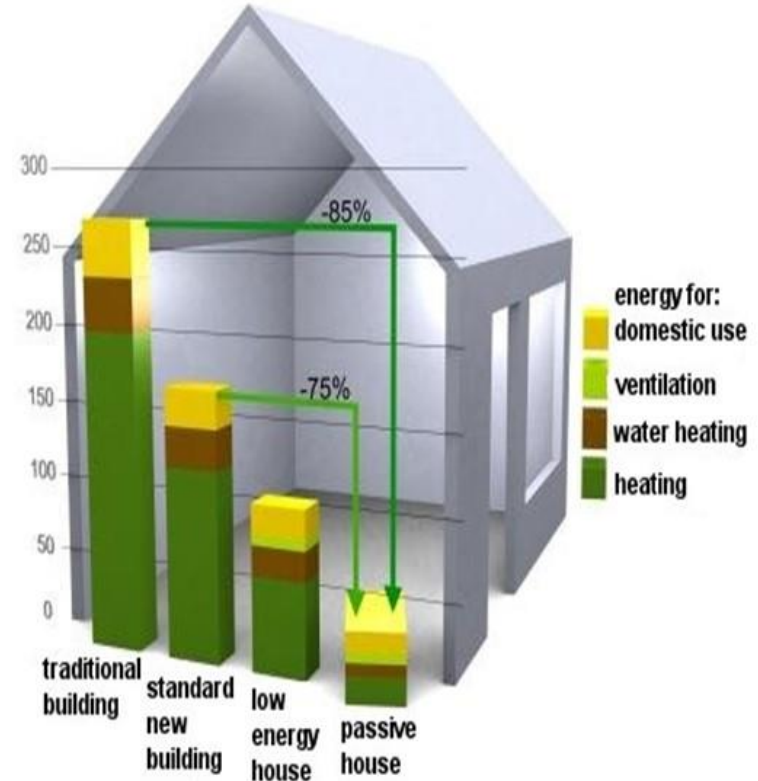
- New buildings & buildings undergoing renovation
- Building envelope and equipment
- Energy codes and minimum energy performance standards (MEPS)
- Enforced and regularly strengthened
- To minimise life-cycle costs.



Energy efficiency policy recommendations

Aiming for net-zero energy consumption in buildings

- Governments should support and encourage
- Make commonly available, when economically viable on a life-cycle cost basis
- Set targets for market share for new construction by 2020
- Set future building codes and MEPS based on net-zero building standards



Energy efficiency policy recommendations

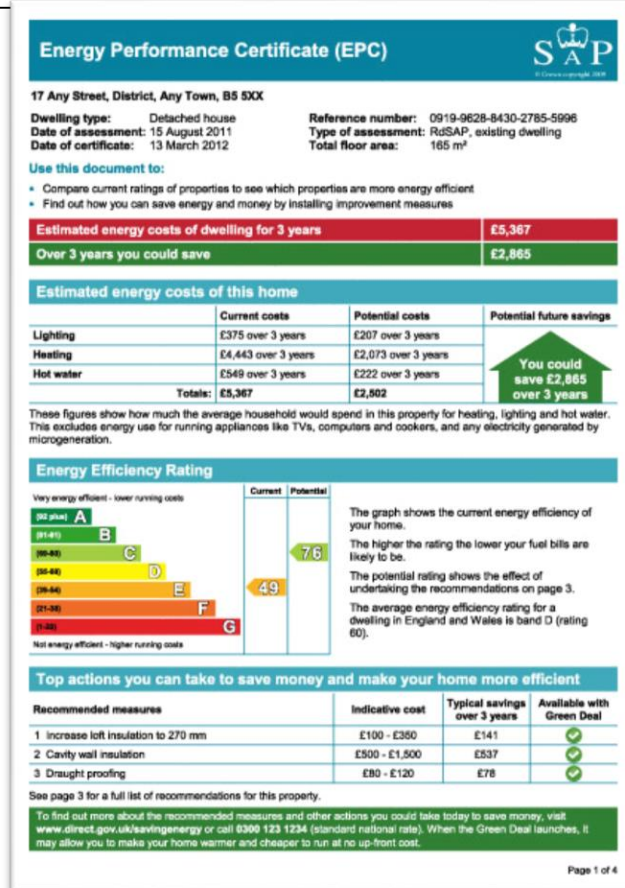
Improving the energy efficiency of existing buildings

- Ambitious timeline and renovation rate
- MEPS for and significant improvements to building envelopes and systems during renovations
- Energy audits, energy ratings and energy performance certification
- Finance and incentives to encourage investment to increase market penetration of long-lasting high efficiency improvements
- Training to improve building retrofit services
- Improvements to the efficiency of public-sector buildings

Energy efficiency policy recommendations

Building energy labels or certificates

- Governments should require building energy performance labels or certificates
- To provide information to owners, buyers and renters.
- At sale or rental

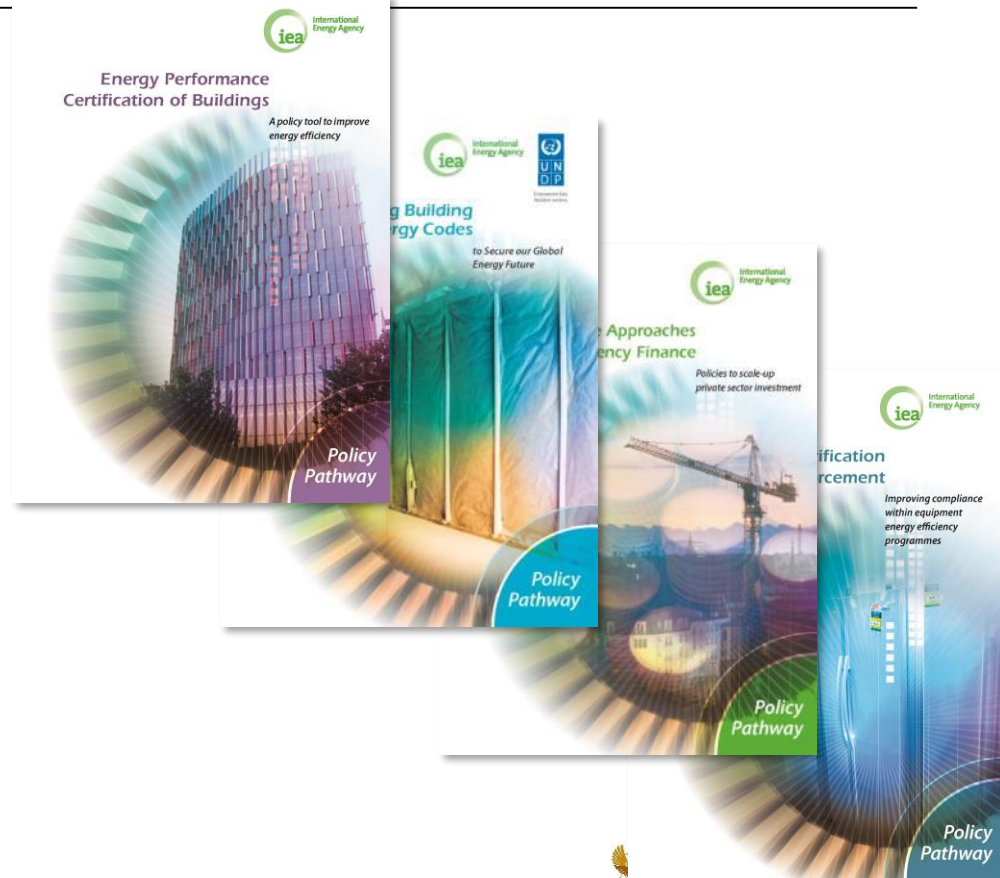
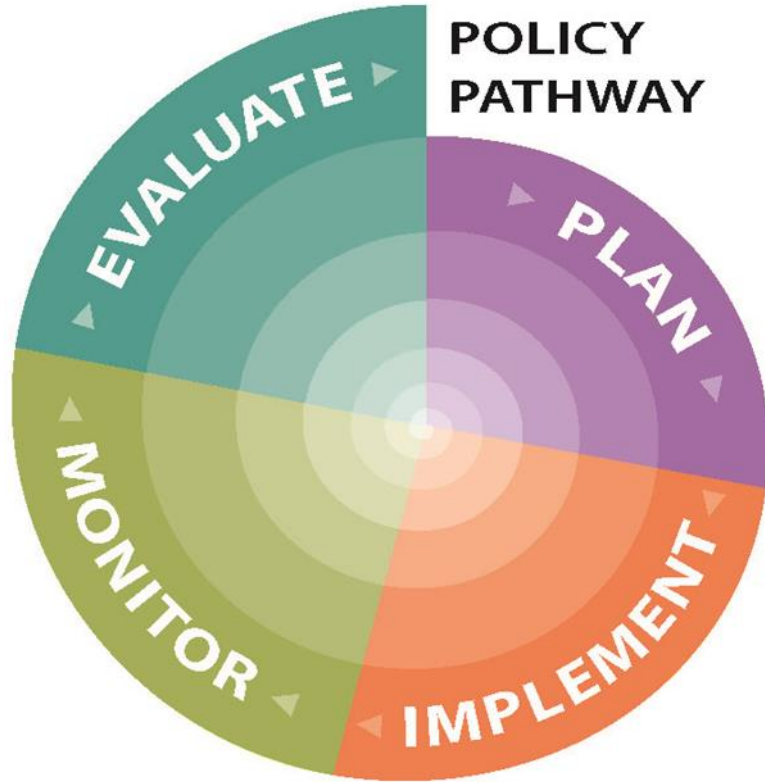


Energy efficiency policy recommendations

Improved energy performance of building components and systems

- Windows and other glazed areas
 - Maximum share of glazed area
 - MEPS for windows to minimise life-cycle costs
 - A requirement for performance labelling
 - Standard test protocols and certified product testing
- HVAC systems
 - MEPS for HVAC systems to minimise life-cycle costs
 - A requirement for energy efficiency labelling
 - Information and training for building designers, owners and others
 - HVAC systems size, installation, testing and maintenance
- Energy management and control systems

Online resource: IEA's Policy Pathway series





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