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Municipal Energy Planning and Monitoring Approaches and Tools

A COMPARATIVE ANALYSIS

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Acronyms

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Abstract

Cities consume approximately 70 % of the world’s energy production and generate the same proportion of the world’s GHG emissions. Local governments’ contribution to the global fight against climate change is therefore crucial. For many of them, however, energy planning and management is a challenging undertaking, due to limited institutional capacity and access to financial resources.

Over the past 10 years, an increasing number of tools have been developed to help local governments set up their own local energy policies and work towards the achievement of national climate targets. This comparative analysis prepared for the [Swiss State Secretariat for Economic Affairs \(SECO\)](#) provides an overview of some of the most widely used approaches internationally: Covenant of Mayors, Compact of Mayors, Tool for Rapid Assessment of City Energy (TRACE) and Climate Action for Urban Sustainability (CURB), with a particular focus on the European Energy Award (eea), which has been tested by SECO in several international contexts, namely Eastern Europe and North Africa.

The comparative analysis assesses each of the five approaches and tools; how they relate to the overall energy planning cycle; and how they can be effectively combined in a city using several methodologies at a time. Indeed, given the complementarity of approaches, demonstrated in this paper, the choice of the most appropriate tool remains with the city and its partners.

Independently of the user city, this paper concludes that all approaches assessed are compatible, but emphasize and provide a more in-depth support to different stages of the municipal energy planning and management cycle. The choice of tools depends on the type and degree of a city’s commitment (short, medium or long-term), the presence/absence of committed national authorities willing to support local energy development, the size of the city, its capacity to collect quality data, and the availability of (international) funding to provide external support.

By drafting and disseminating this paper, SECO invites other donors and cooperation agencies to work together and leverage important synergies as they support cities in energy and climate planning, management and monitoring, using different, but complementary and combinable approaches and tools.

Acronyms

BEI - Baseline Emissions Inventory
C40 - C40 Cities Climate Leadership Group
CDP - Carbon Disclosure Project
CES-MED - Clean Energy Saving Mediterranean Cities
CoM - Covenant of Mayors
CoMO - Covenant of Mayors Office
CURB - Climate Action for Urban Sustainability
EE - Energy Efficiency
eea - European Energy Award
EMT - eea-Management-Tool
ESCO - Energy Service Company
ESMAP - Energy Sector Management Assistance Program
EU - European Union
GHG - Green House Gas (emissions)
GPC - Global Protocol for Community Scale Emissions
ICLEI - International Council for Local Environmental Initiatives
IO - International Office
IPCC - Intergovernmental Panel on Climate Change
JRC - Joint Research Centre
KPIs - Key Performance Indicators
LED - Light Emitting Diode
MEAS - Municipal Energy Accounting System
PPP – Public Private Partnership
SEAP - Sustainable Energy Action Plan
SECAP(S) - Sustainable Energy and Climate Action Plan(s)
SECO - Swiss State Secretariat for Economic Affairs
SUEEP - Sustainable Urban Energy and Emissions Planning
SWOT - Strengths, Weakness, Opportunities, Threats
TRACE - Tool for Rapid Assessment of City Energy
UCLG - United Cities and Local Governments
UN - United Nations
WB - World Bank

I. Introduction

Almost half of the world's population lives in urban areas, where they consume approximately 70 % of the world's energy production and generate the same proportion of the world's Green House Gas (GHG) emissions. This highlights the increasing relevance of energy management in cities and the crucial role of local governments to mitigate climate change. Energy management, however, is an ambitious undertaking for local governments in developing and emerging economies. Many of them face important challenges linked with limited local capacity and access to resources in order to effectively plan, manage and monitor local energy policy and climate impacts.

Aside from receiving support for the improvement of service delivery, local governments are seeking guidance for the development and implementation of integrated and cross-cutting energy and climate policy. This relates to the manner in which cities plan their urban development and foster the participation of citizens and stakeholders in target-setting, planning and decision-making. An increasing number of tools has been developed to help local governments define priorities, set their own local energy policies and work towards the achievement of national climate targets.

This policy brief proposed by the [Swiss State Secretariat for Economic Affairs \(SECO\)](#) provides an overview of some of the most widely used approaches internationally: Covenant of Mayors, Compact of Mayors, Tool for Rapid Assessment of City Energy¹ (TRACE), Climate Action for Urban Sustainability (CURB) and the European Energy Award (eea). SECO has implemented several projects in Rumania and in the Ukraine and supported the introduction of energy-planning processes in Morocco and Tunisia, based on the eea. It has chosen this approach based on the experience of more than 700 Swiss municipalities (approx. 4.5 Mio inhabitants) using the eea successfully with more than 400 being certified (Label "*Cité de l'Énergie*"/eea). Some of them have used the eea in combination with other approaches like the Covenant of Mayors.

Indeed, an increasing number of cities chose to use several approaches and tools at a time, thus enhancing the support provided at different stages of the energy planning cycle. This paper highlights the specific characteristics, strengths and challenges of each approach and assesses the way they can be effectively combined, should cities decide to use more than one tool at a time. Furthermore, in an effort to identify opportunities for cooperation and leverage important synergies among donors and cooperation agencies, this paper emphasises some of the specific features of the eea, drawing from SECO's experience, and the eea compares to other, similar approaches used in international contexts.

Section II presents an overview of five of the most commonly referenced international approaches and tools for energy and climate management. **Section III** identifies some of the distinctive characteristics of the approaches, summarised in table 1.0. **Section IV** focuses on some of the specific characteristics of the eea and how it can be effectively combined with other approaches and tools. **Section V** provides an overview on how the tools discussed in this paper interact with each other and with the municipal energy planning cycle. It concludes on how countries can effectively engage in more than one approach at a time.

NOTE: The information and data used in this paper have been collected based on a desk review and thanks to the review and information provided by representatives from the CoM Office, the World Bank and its ESMAP Programme, the Forum European Energy Award, the Swiss *Energiestadt* Association and Cities Alliance. All tools assessed in this paper, however, undergo a continuous process of review; some of them will be updated shortly. The analysis provided in this paper reflects the status of March 2017.

¹ TRACE can be (but is not systematically) used in combination with the World Bank's Sustainable Urban Energy and Emissions Planning (SUEEP) Approach, which however will not be further discussed in this paper (information on SUEEP is provided at: <http://siteresources.worldbank.org/INTURBANDEVELOPMENT/Resources/336387-1369969101352/Ostojic-et-al.pdf>)

II. Overview of approaches and tools

This section provides a brief summary of the most commonly referenced international approaches and tools for energy and climate management. The list is not exhaustive but represents a selection of the most widely used approaches internationally, including in developing and emerging economies.

European Energy Award®

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|---------------------------|---|
| Creation | The European Energy Award (eea) was established in 2003, based on the Swiss “Energierstadt/Cité de l’énergie” Label (1990). The founding parties are Switzerland, Austria and Nordrhein-Westfalen (Germany). |
| Management | The eea management structure is based on the principle of subsidiarity: National eea designated authorities manage the national eea processes and certification. At the international level, the Forum European Energy Award, an Association (e.V.) registered in Brussels (Belgium), with its managing eea Office (IO) based in Zurich (Switzerland), assures the coordination, harmonisation and quality of the system. |
| Currently involved | 1346 municipalities, 40 million inhabitants, 8 countries (+3 pilot countries) |

The European Energy Award (eea) is a quality management and certification system for municipalities and regions. It supports local authorities in establishing interdisciplinary planning approaches and implementing effective energy and climate policy measures. The national (or in some cases regional) eea organisation refers the municipality to an accredited eea advisor, who provides technical and organisational support for the municipality throughout the entire eea process. **The eea is based on a process of continuous improvement, ensuring that committed municipalities continually increase energy efficiency, the share of renewable energy use, and that energy considerations are mainstreamed in urban and urban-mobility planning.** The process includes the following steps:

- 1- **High-level commitment:** Municipalities take a top-level decision to enter the eea process. They designate staff for this purpose and register with the national or regional organisation before entering the process.
- 2- **Energy Team:** The municipality sets up a working group (or dedicated commission) charged with implementing the eea process and leading the entire planning cycle. The team is composed of municipal key persons, both public servants and municipal council members from different municipal departments. If considered relevant, it may include other local public authorities, civil society groups and private sector representatives.
- 3- **Initial energy review:** Based on the eea-Management-Tool (EMT), the Energy Team and the eea review the municipality’s current energy and climate policy, achievements, impacts and areas that provide potential for improvement. The eea tool – a catalogue of 79 measures – takes into account a municipality’s full scope of action regarding energy and climate protection policy based on six (6) areas: urban and spatial planning; municipal buildings and infrastructure; supply and disposal (incl. energy, electricity, water, waste); mobility; internal organization; cooperation and communication. It includes both quantitative indicators (emissions inventories, share of renewables, etc.) and qualitative, more process-oriented indicators proposing concrete actions to be taken in order to reduce emissions, increase the share of renewables, achieve savings and

other benefits for the municipality. A report sets out the municipality’s specific strengths and weaknesses, and identifies needs and opportunities to take action.

- 4- **Energy policy program, incl. targets and activities:** Based on the results from the initial energy review, the Energy Team prepares an energy policy program, with a binding set of activities for subsequent years and sets out responsibilities and deadlines. This program is comparable with a “Sustainable Energy and Climate Action Plan (SECAP),” e.g. Covenant of Mayors below.
- 5- **Project implementation:** Policymakers, public administration and private stakeholders implement the municipal activity program. Guidance for decision-making and implementation are delivered through the national eea organisation, depending on the country.
- 6- **Monitoring and internal auditing:** An interdisciplinary Energy Team with the help of an eea advisor conduct an annual, internal audit (assisted self-assessment) in order to review the status of implementation, assess intermediary results and check for the achievement of locally set targets.
- 7- **External audit (every four years):** If the internal audit shows that a municipality has reached at least 50% of the 79 measures proposed (and given its scope of action), it is referred to an external audit, which must be completed and renewed every four years.
- 8- **Certification, award and benchmarking:** Once both the eea auditor and the national eea organisation have confirmed a municipality’s outstanding energy and climate performance, based on the results of the external audit, the municipality is awarded the “eea”; or the “eea Gold” label (if it has reached more than 75% of total measures).

Covenant of Mayors

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| Creation | The Covenant of Mayors (CoM) was launched by the European Commission in 2008, following the adoption of the European Union Climate and Energy Package the same year. |
| Management | <p>At the international level, the Covenant of Mayors Office (CoMO), located in Brussels, Belgium, is responsible for the coordination and operational management of the initiative. The Joint Research Centre (JRC), based in Italy, is an EU research centre on energy issues and one of the 6 EU research centres of the EU territory. The JRC assists the CoMO in assessing the Sustainable Energy and Climate Action Plans (SECAPS) submitted by CoM members and providing comments on the submitted Baseline-Emissions-Inventories (BEI) and action plans. As the scientific and technical arm of the European Commission, it provides signatories with technical guidelines and templates to support the delivery of their Covenant of Mayors commitments as well as to monitor implementation and results. It collaborates with EU projects such as CES-MED to adapt guidelines and templates to the specificities on non-EU States.</p> <p>At national levels, Covenant Coordinators provide strategic guidance, financial and technical support to signatory cities; and Covenant Supporters (e.g. networks of local authorities) are charged with promotional activities and facilitating the sharing of experience.</p> |
| Currently involved | 6900 signatories, 213 Million inhabitants, 54 countries |

After the adoption in 2008 of the EU Climate and Energy Package, the European Commission launched the Covenant of Mayors (CoM) to endorse and support the efforts deployed by local authorities in the implementation of sustainable energy policies. As the only movement of its kind mobilising local and sub-national actors around the fulfilment of EU objectives (applicable to EU Member States) – the Covenant of Mayors is often considered an exceptional model of multi-level governance by European institutions.

The Covenant of Mayors is a **step-by-step initiative aimed to facilitate the development of local Sustainable Energy and Climate Action Plans (SECAPs) for cities to reduce emissions by 40% until 2030. The 40% target is set on the basis of a GHG emissions inventory referring to a baseline year and compared with a “business as usual” curve.**

The compulsory sectors covered by the CoM are: municipal buildings, public lighting, transport/ mobility, and communication. Additional sectors (e.g., urban planning, electricity and heat production from renewable sources, solid waste and waste water management) may be included in the SECAP, if they provide opportunities for municipal governments to reduce emissions.

Specifically, signatories of the CoM agree to:

- Prepare a Baseline Emission Inventory (BEI) within the year following adhesion;
- Submit a SECAP² (approved by the municipal council) within the year following adhesion (a lengthy and detailed guidelines document for SECAP preparation is available);
- Publish periodically (every 2 years after submission of their SECAP) an Implementation Report stating the degree of implementation of the action plan, intermediate results and emissions reductions achieved;
- Promote their activities and involve local citizens/stakeholders, including the organisation of Local Energy Days; and
- Spread the message of the CoM, encouraging other local authorities to join and by contributing to events and thematic workshops.

Tool for Rapid Assessment of City Energy³ (TRACE)

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| Creation | The Tool for Rapid Assessment of City Energy (TRACE) was developed by the Energy Sector Management Assistance Program (ESMAP), a global technical assistance programme administered by the World Bank in 2010. |
| Management | The tool can be downloaded from the ESMAP website. In a partnership with ESMAP, the World Bank Institute provides a TRACE e-learning course for the use of TRACE by city governments and their partners. |
| Currently involved | 70 cities (from which 32 in Mexico) |

² The newly established SECAP (launched in January and enforced since October 2015) encompasses previous SEAP sectors as described here above and is strengthened with climatic concerns through two additional chapters on adaptation and risks mitigation. These two chapters are compulsory elements of the SECAP format.

³ TRACE will be included in the comparative table as part of the World Bank’s SUEEP Approach.

The Tool for Rapid Assessment of City Energy (TRACE) was developed in 2010 by the World Bank and is a **decision-support tool designed to help cities quickly identify under-performing sectors, evaluate improvement and cost-saving potential, and prioritise sectors and actions for energy efficiency (EE) intervention.** It covers six (6) municipal sectors: passenger transport, municipal buildings, water and wastewater, public lighting, solid waste, green power and heat. A new version of TRACE (2.0), currently under development, will add three additional sectors: residential & commercial buildings as well as urban industry.

TRACE consists of three modules to be undertaken over a 3-month period: an energy benchmarking module which compares 28 key performance indicators (KPIs) among 64 peer cities⁴, a sector prioritisation module which identifies sectors that offer the greatest potential with respect to energy-cost savings (e.g. urban transport, buildings, water and wastewater management, public lighting and municipal waste), and an intervention selection module which functions like a “playbook” of approximately 100 tried-and-tested energy efficiency measures and recommendations (including models for public-private-partnership (PPP), leasing, ESCO financing and municipal financing) based on over 190 case studies. This module helps cities select locally appropriate energy efficiency interventions and calculate preliminary financial analysis (through built-in intervention models/ calculators).

TRACE is designed with the intention to involve city decision makers in the deployment process. It starts with benchmark data collection, goes through an on-location assessment involving experts and decision makers, and ends with a final report to city authorities with recommendations of EE interventions tailored to the city’s individual context.

Compact of Mayors

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| Creation | The Compact of Mayors was launched at the 2014 United Nations Climate Summit by UN Secretary-General Ban Ki-moon and his Special Envoy for Cities and Climate Change, Michael R. Bloomberg. |
| Management | On an international level, the reporting platforms (carbonn® Climate Registry) and the CDP (formerly Carbon Disclosure Project) are respectively managed by the Bonn Centre for Local Climate Action and Reporting (carbonn® Centre), hosted by the Local Governments for Sustainability (ICLEI) World Secretariat in Germany, and by the CDP headquartered in London, United Kingdom. There are no management structures at national levels. The Compact of Mayors is a public reporting space for cities to report independently on their climate data, via the Web. |
| Currently involved | 392 cities, 362 Million inhabitants, 78 countries. |

The Compact of Mayors was launched by UN Secretary-General Ban Ki-moon and his Special Envoy for Cities and Climate Change, Michael R. Bloomberg, under the leadership of the world’s global city networks – C40 Cities Climate Leadership Group (C40), ICLEI – Local Governments for Sustainability (ICLEI) and the United Cities and Local Governments (UCLG) with support from UN-Habitat, the UN’s lead agency

⁴ <http://www.esmap.org/TRACE> (TRACE 2.0 will include data from 97 cities).

on urban issues⁵. The Compact of Mayors is a **global coalition of mayors and city officials committing to reduce local greenhouse gas emissions, enhance resilience to climate change and track their progress publicly**. It is an agreement by city networks – and by their members – to fight climate change in a consistent and complimentary manner to national efforts.⁶

The Compact (i) collects climate data that cities are already reporting in a transparent manner, and makes it available on a single platform; (ii) builds on existing cooperative efforts, partnering with other initiatives to better measure and communicate the impact of city action; and (iii) brings attention to, and quantifies, city action and its impact.

Cities engaged with the Compact commit to the following mitigation and adaptation measures:

- a. **Mitigation:** reduce GHG emissions, measure community emissions, set data-based targets for the future, develop climate action plans
- b. **Adaptation:** address the impacts of climate change, identify climate hazards, assess vulnerabilities, develop climate adaptation plans

Cities are expected to register and report data through the carbonn Climate Registry or CDP platform (formerly the “Carbon Disclosure Project”). A significant amount of the technical assistance to cities under CURB comes in the form of a GHG inventory based on the Global Protocol for Community Scale Emissions (GPC). The GPC requires the city to measure and disclose a comprehensive inventory of GHG emissions and to total these emissions using two distinct but complementary approaches. One captures emissions from both production and consumption activities taking place within the city boundary, including some emissions released outside the city boundary. The other categorizes all emissions into “scopes,” depending on where they physically occur. Following this investment, the city identifies climate hazards and sets its own measurable targets based on which it will establish action plans to (a) reduce GHG emissions and (b) adjust to actual and expected climate change impacts. The establishment of the action plan is based on the CURB tool (see below) simulating expected climate impacts of planned actions. **Once the action plans are established, the city has met all of the Compact of Mayors requirements. It will be expected to report its progress on mitigation and adaptation annually.**

Climate Action for Urban Sustainability (CURB)⁷

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| Creation | The Climate Action for Urban Sustainability (CURB) Tool was pre-launched by the World Bank in partnership with C40 during the COP20 in Lima, Peru, and officially launched in 2016 in partnership with C40 and Compact of Mayors. |
| Management | World Bank, C40 Climate Leadership Group, Compact of Mayors and Cities Alliance |
| Currently involved | 130 cities |

CURB is a dynamic energy and climate impact modelling and simulation tool that helps municipal governments and local climate planners **understand the energy and emission implications of specific climate interventions** for their local context. It demonstrates that by reducing their environmental

⁵ <http://www.compactofmayors.org/history/>.

⁶ http://www.compactofmayors.org/content/uploads/sites/14/2015/07/Compact-of-Mayors-Full-Guide_July2015.pdf.

⁷ CURB will be included in the comparative table as part of the Compact of Mayors approach.

impact, cities can achieve a variety of local benefits including improved health and air quality, job creation and economic growth, energy independence, while often saving resources. CURB aims to help cities assess the implications of policy and technology interventions by allowing them to evaluate their cost, feasibility, and impact. It responds to local realities through a flexible and modular design, allowing users to focus on the information (e.g. energy or emission impacts, cost savings, etc.) that is most relevant to their cities' priorities.

The CURB Tool helps cities simulate the projected impacts of technology interventions on energy demand, cost, and GHG emissions (it might further include air quality impacts, currently under discussion). The impacts are put in the perspective of a city's overall energy and emissions profile (based on the city's data on current performance, e.g. a GHG emissions inventory). The simulation helps cities (a) understand the projected emissions/ energy demand trajectory in a business-as-usual scenario, (b) set local emissions/ energy targets, (c) benchmark against peer cities, and (d) prioritize feasible interventions based on expected cost savings, emission abatement, energy use reduction, and complexity/cost of implementation. Financial implications include lifetime implementation costs, annual savings and payback period. Impact modeling draws upon a set of data provided by the city on current energy performance where available, and provides a set of global proxy data for where gaps exist in the city's own data.

All tools developed as part of CURB are made freely available to the public. In this way, any city or organisation can not only access and use them, but also build on them to help meet evolving needs of different cities around the world. C40 also maintains an online exchange platform for cities participating in CURB which includes:

- a comprehensive document library, where the community can upload and share presentations, reports, articles, case studies and other files with the C40 community.
- A complementary discussion forum, where city representatives can engage one another in an ad-hoc, informal manner, share knowledge, and ask questions of the community.
- A people directory helps members of the C40 Community connect directly.
- C40 Exchange calendar serves as an inventory of past and upcoming webinars, workshops, and conferences on a diverse range of topics that directly relate to the projects, constraints and successes of C40 cities.

Finally, a 'helpdesk function' is also provided to provide ongoing technical support for cities during the CURB lifecycle. This is designed to help them in the process of developing their inventory to meet the requirements of the GPC and Compact of Mayors. This technical support will be provided primarily through the dedicated consultant team.

III. Overview of distinctive characteristics

Based on a selection of indicators, this section provides a comparative overview of 10 distinctive characteristics associated with the approaches and tools presented above, their aims, focus and how they relate to the municipal energy planning cycle. A summary is provided in Table 1.0 (*see below*).

- 1- **Mitigation versus adaptation measures:** With the exception of the eea, which includes a few adaptation measures (linked with urban planning), all approaches discussed in this paper focus on climate change mitigation.
- 2- **Main target user:** All approaches target municipal governments (municipal administration and council) as the primary beneficiary and owner of the planning process.

- 3- **Implication of national government:** With the exception of the Covenant of Mayors in developing country contexts, the eea is the only approach proposing (and recommending) a very active and permanent engagement of the National Government (e.g. National designated eea authority) working hand in hand with private advisors (e.g. local companies or individual experts).
- 4- **Planning cycle phases covered:** All approaches cover the three initial stages of the Planning Process (commitment, diagnostic and planning). The eea, through its national offices, is the only one to deliver tools for project *implementation*. The Covenant of Mayors, the Compact of Mayors and the eea request the municipality to monitor progress on a regular basis. While as the Covenant of Mayors monitors progress made on the SECAP and associated emissions reductions, the Compact of Mayors focuses on yearly achieved overall emissions reductions; the eea requires municipalities to assess their performance based on an (inter)nationally standardised catalogue of 79 measures (including both quantitative and qualitative indicators). Based on the monitoring, the eea is the only approach proposing an external audit and certification scheme/label for outstanding performance.
- 5- **Duration of the full cycle:** The establishment of an action plan lasts between a few weeks (TRACE/CURB, if quality data is available), to two months (eea) and up to 3 years (Compact of Mayors), depending on the city-size, the level of details and the data required for the establishment of the plan. The eea certification must be renewed every 4 years.
- 6- **Cost of Implementation/ Business Model:** The cost of engaging with a particular approach or tool is assessed from both a municipal and a national perspective, indicating additional/ external financing sources. The eea is the only approach to be expected to “stand alone,” with no or very little (international) subsidies for initial reviews, planning and monitoring. This means that municipal and national governments are expected to financially contribute to the sustainable operation and quality-insurance of the system. The use of all other tools – created on an open source basis – is “free of charge” for municipal and national governments, thanks to subsidies provided by international organisations (e.g. EU, World Bank, international donors, etc.). The eea fees for pilot and developing countries have been substantially reduced (e.g. Morocco). For cities seeking certification, an additional audit fee will be charged.
- 7- **Local Investment in Human Resources:** The introduction of all tools requires an active engagement – and important time commitment – of local authorities. To assist local teams (in data gathering, analysis, the development of action plans, monitoring etc.), international donors usually support the mobilisation of external advisors. In Europe, eea advisors, trainers and auditors are accredited by the National Designated Authority, contracted by municipal governments and remunerated (regularly) on a mission-base.
- 8- **Advisory services provided to local governments:** All approaches discussed in this paper are based on external assistance to local governments, acting as facilitators. A key difference of the eea is the accreditation of advisors and auditors, based on an application and training process led by the National Designated Authority. Cities thus choose from a list of qualified (and nationally accredited) experts to engage in “assisted” self-assessments, planning, implementation and monitoring. In all cases, investments by local authorities are relatively high; a strong local commitment is required for any approach or tool to be effective and eventually, owned by local actors. Some eea-countries like Luxembourg deploy a number of “free advisory days” (e.g. 30/year) to city governments engaged in the process. In Switzerland, eea-municipalities can apply for project implementation support, to mention a few examples.

- 9- **Sectors covered:** Another key difference identified is the coverage of sectors. The most emissions-intensive sectors managed by the city are included in all approaches and tools, although the Covenant of Mayors considers that not all of them are compulsory. The eea pledges for a more holistic approach, including additional sectors like urban planning, internal organisation/ finance, and communication/ awareness.
- 10- **User profile:** The Covenant of Mayors, which is actively promoted by the EU, has the highest number of signatory cities, followed by the eea. All approaches and tools apply to all sizes of cities. However, most cities engaged with the eea are small or medium-sized; the Covenant of Mayors, CURB and TRACE apply to all sizes of cities with TRACE being more adapted to larger city contexts.

Table 1.0 summarises the comparison of approaches, based on the 10 distinctive features discussed above. For the purpose of comparison, the Compact of Mayors approach is linked with the CURB tool; this reflects the recent decision of the Compact of Mayors initiative to recommend CURB as the preferred tool for energy planning. There is currently, however, no obligation for TRACE or CURB users to sign the Compact of Mayors.

As stated above, some of the features apply to all or several approaches and tools simultaneously, with some variations. Others only apply to a single approach or tool (for example, the possibility to certify cities, based on the eea label).

The following colour code has been used to indicate:

| | |
|--|--|
| | Aspects that fully apply; key components/ strengths |
| | Aspects that apply partially |
| | Aspects that do not apply/ are not available |
| | Unique characteristics of the eea® |

Table 1.0: Distinctive characteristics of energy planning and monitoring frameworks (and associated tools)

| | European Energy Award (eea) | Covenant of Mayors/ SECAP | TRACE | Compact of Mayors - CURB |
|--|---|----------------------------|-------------------------------------|---|
| 1- Focus on climate change | | | | |
| Mitigation | | | | |
| Adaptation/ Resilience | Only marginal focus: 2/ 79 measures refer to adaptation/ resilience. | | | Signatories of the Compact commit to adaptation measures. |
| 2- Beneficiary | | | | |
| Municipal Governments | | | | |
| Groups of municipalities | | | | |
| 3- Governance of the process | | | | |
| National Commitment required | National designated eea authority | National focal point | | |
| Local coordination unit required | Municipal Energy Team | CoM Local Coordinator | Municipal "Leadership" | Municipal departments |
| 4- Providing guidance on the following planning/ management steps | | | | |
| Commitment | | | | |
| Diagnostic | | | | |
| Planning | | | | |
| Implementation | Country-specific toolboxes | | | |
| Internal monitoring/ reporting | Annual reporting | Monitoring (every 2 years) | | 3 target years (at any frequency) |
| External monitoring, certification | Validity: 4 years | | | |
| 5- Duration of the planning-management cycle | | | | |
| Establishment of action plan | 2 -6 months | 4-6 months | 3-months | Approx. 1 month up to 3 years |
| Evaluation/ reporting | Yearly | Every 2 years | | Any frequency |
| Validity of certification | 4 years | | | |
| 6- Cost of implementation (fees, contracting)/ Business Model | | | | |
| For cities (or their partners) | In Europe: Annual licence fee, fixed by the national eea organisation; EUR 500 – 2'000/ city, depending on the number of inhabitants; free of charge in Luxemburg. EUR 1'000 for pilot cities participating <i>without</i> a national authority Auditors fee (approx. EUR 3'000/ city every 4 years) | Free of charge | Free of charge (publicly available) | Free of charge |
| For national governments | Annual licence fee in pilot and developing countries (in and near Europe): EUR | | | |

| | European Energy Award (eea) | Covenant of Mayors/ SECAP | TRACE | Compact of Mayors - CURB |
|-------------------|--|---|--|--|
| Subsidies/ donors | 5'000/year Membership fee ⁸ (EUR 2'000/y.) In Europe: national authorities in charge of energy/ environment/ municipalities In extra-European contexts: international donors/ national governments | EU Institutions: European Commission, Committee of the Regions, European Parliament, European Investment Bank | World Bank/ ESMAP (in the context of World Bank activities) and other donors (e.g. GEF) | Compact of Mayors: Bloomberg Philanthropies CURB: World Bank Bloomberg Philanthropies Children's Investment Fund Foundation |
| Business Model | Nationally self-sustained (stand-alone) process based on cities' financial contribution Financing of the Forum eea based on national contributions | Fully subsidized by the EU | In the context of World Bank activities, ESMAP/WB may provide support for TRACE deployment. | Compact of Mayors: fully subsidized by: - C40 - ICLEI - UCLG - UN-Habitat |

7- Local investment in Human Resources required

| | | | | |
|----------------------------|---|---|--|--|
| Investment in HR (country) | National office (part-time staff) eea Trainers (mission-based) eea Advisors (mission-based) eea Auditors (mission-based) | Coordination Office Supporting Organizations | | External consultant (if internal team coordinator not available) |
| Investment in HR (city) | Decision-makers Energy Team Technical (project) teams | Decision-makers 1 CoM coordinator/ city | Decision-makers Technical agents in charge of energy/ environment | Decision-makers Team coordinator Technical agents in charge of energy/ environment |

8- Advisory services provided to local governments:

| | | | | |
|---------------------------------------|--|--------------------------|---|---|
| For the diagnostic | Nationally accredited eea advisors (sponsored by national/regional organization or by municipalities) | EU sponsored consultants | Potentially supported by ESMAP/WB (e.g. business model) | Independent consultants: support by the WB team upon request and for World Bank territories |
| For planning | Nationally accredited eea advisors (sponsored by national/regional organization or by municipalities) | EU sponsored consultants | Potentially supported by ESMAP/WB (e.g. business model) | Independent consultants: support by the WB team upon request and for World Bank territories |
| For project design and Implementation | Often through the same eea advisor (in some countries sponsored by nat. government, e.g. 30 days/ year/ city in Luxemburg) | | | |

⁸ Participation at the Forum eea (Annual meetings)

| | European Energy Award (eea) | Covenant of Mayors/ SECAP | TRACE | Compact of Mayors - CURB |
|---------------------|--|---------------------------|-------|-------------------------------|
| Monitoring Audit | Nationally accredited eea advisors | | | Under CoM platform compliance |
| | Nationally accredited eea auditors <i>In Europe: paid by cities</i> | | | |

9- Sectors covered

| | | | | |
|-----------------------------------|-----------|-----------------------------|--|---------------------------------|
| Urban Planning | | If opportunities identified | | |
| Municipal Buildings | | Compulsory | | |
| Private/ residential buildings | Estimates | | | |
| Industry | Estimates | | | |
| Public Lighting | | Compulsory | | |
| Electricity Production | | If opportunities identified | | |
| Heat Production | | If opportunities identified | | |
| Solid Waste Management | | If opportunities identified | | |
| Water/ Waste Water | | If opportunities identified | | |
| Transport/ Mobility | | Compulsory | | |
| Access to energy | | | | Newly introduced in version 2.0 |
| Internal organization | | | | |
| Communication, citizen engagement | | | | |

10- User profile

| | | | | |
|---------------------------|-------------------|--|---------------------------|-------------------------|
| Number of municipalities | 1 346 user cities | 5 896 signatories 16 countries (Europe) 9 countries (South Mediterranean Region) | 27 cities 17 countries | 130+ cities |
| Number of inhabitants | 40 Million | Not specified | 45 Million inhabitants | To be confirmed |
| Average size of user city | Small to medium | Small, medium and large | Small, medium and large | Small, medium and large |

IV. The European Energy Award in connexion with other approaches and tools

The eea, like all other instruments and approaches, aims to provide guidance and support for sustainable energy planning and management at the municipal level. Similar to the other approaches included in this analysis, it focuses on climate change mitigation, rather than adaptation and resilience.

Special characteristics and unique strengths of the eea

Its unique strengths can be summarised as follows: the eea is (a) a process-based quality-management system providing guidance for city governments to engage in a **holistic and continuous cycle** of engagement in sustainable energy and climate management, including both qualitative and quantitative indicators; it (b) proposes a catalogue of **79 concrete (implementation-oriented) measures**, based on international best-practice, for city governments to choose from and prioritise; it (c) facilitates annual monitoring and comparison with peer cities, based on a **common, standardised and nationally adapted grading tool** (with the possibility to benchmark cities' performance over time, within and across countries); and (d) it allows cities to eventually get **certified** for outstanding energy policy and performance.

The eea special characteristics are presented below:

1- Facilitating the engagement of local governments in a continuous process of self-assessment and progressive improvement in energy and climate management

The eea engages local governments in a *continuous* process of engagement and progressive improvement over years. Most approaches considered for city-based energy management provide instruments for baseline assessments, target-setting and planning (energy balance, GHG inventories, simulations based on benchmark data, scenario modelling, etc.). Implementation and monitoring, however, is generally left up to the local government. **The eea specifically calls for cities to continuously monitor progress and compare with peer cities, based on a common national framework of measures and indicators, providing the basis for annual monitoring (internally) and eventually, certification (external audit). Nationally accredited eea advisors (local experts from public or private sectors) facilitate the planning and internal monitoring. Even small steps towards the achievement of a 100% on each measure can be recognised and rewarded,** based on the eea monitoring system.

2- Strengthening local governance by supporting a holistic approach to energy and climate management

The eea methodological framework structure and contents reflect the need for a *holistic* local approach to energy and climate management, beyond the implementation of isolated projects. Like other approaches it supports interventions in the generally recommended technical areas that a city can directly control (e.g. buildings, public lighting, and transport, electricity/ heat/ cold production, disposal/ waste and waste water management). In addition to these areas and unlike other approaches, it encourages the city to **consider additional aspects related to internal governance and organisation (e.g. establishment of municipal Energy Teams; allocation of local resources and budgeting; municipal training programs, etc.);**

urban and spatial planning and cooperation/ communication (with other administrative levels, municipalities and regions; with public, civil and private sector stakeholders), referring to the city government as a facilitator, co-investor and regulator.

3- Minimising barriers of entry for the city

Compared with other approaches and tools, the efforts associated with preliminary data collection for a city to engage in energy planning are relatively modest in the eea process. Most approaches urge the city to conduct a GHG emissions inventory and/ or to establish an energy balance/ audit, as part of the initial review process. Data collection, however, is time-consuming, given that data is often unavailable, inaccessible, unreliable or out-dated. To speed up the process and facilitate analysis based on incomplete data bases, some tools (like TRACE and CURB) provide proxy data. **The eea does not require quantitative data collection prior to the establishment of an activities program.** It however, rewards cities that have done so, by providing them with higher scores. The eea initial energy review conducted at the beginning of the process is a SWOT-Analysis (Strengths, Weakness, Opportunities, and Threats) of the current local energy policy situation, a review of what the city has already achieved, is currently doing and planning to do, compared with best national and international practice (e.g. 79 measures). The eea framework thus recognises data collection as a measure in itself and as a first step to take informed action: for instance, if the city decides to establish a Municipal Energy Accounting System (i.e. measure n° 2.1.3 of the eea Catalogue of Measures), it will be required to make an inventory of municipal buildings, counters, energy bills, etc. as a first step to progressively reach a 100% on that specific measure. Such inventories, however, are not a prerequisite to enter the eea planning process.

4- Providing guidance for implementation, based on international best practice

Most approaches and tools help cities identify priority sectors, based on initial assessments (e.g. energy consumption, costs and GHG emissions). Based on these, tools like TRACE or CURB evaluate the reduction potentials and projected cost-savings, thus allow city governments to set targets based on their own data and the use of complementary international proxy data. Most of the approaches leave it open to the cities and their advisors, however, to define the specific actions to be taken. **The eea, TRACE⁹ and CURB provide further guidance for implementation, by proposing a menu of 60 (TRACE), 75 (CURB) and 79 (eea) measures or international best-practice action to improve the energy performance of a city.** The eea catalogue measures is regularly adjusted based on inputs from peer cities worldwide (i.e. Annual Calibration Meeting). In addition to the catalogue, national eea organisations (e.g. Swiss Association of Energy Cities) usually provide a large set of tools associated with each measure, thus helping cities move from planning to implementation.

5- Measuring increasing performance thanks to a standardised framework of indicators for continuous self-assessment over time and benchmarking among peer-cities

The indicators usually provided for initial assessments and reporting (e.g. Covenant and Compact of Mayors) are quantitative, allowing cities to set emissions baselines and estimate

⁹ Similarly, TRACE proposes a « playbook » of approximately 60 energy efficiency measures.

GHG reductions, energy and cost-savings over time. In addition, CURB reports on expected co-benefits for each action area (e.g., air quality, public health, energy independence, deferred infrastructure). The focus of nearly all tools lies on measuring the *quantitative impact* achieved through concerted action. However, it often takes a considerable amount of time (2-5 years in average, according to the nature and complexity of projects) for cities to implement actions that yield measurable, quantifiable impacts. **The eea catalogue therefore emphasises qualitative/ process-based measures beyond quantitative indicators, thus measuring *how certain outputs and impacts have been achieved*. It encourages cities to engage in a step-by-step process, starting with preparatory activities (such as political decisions, data collection, etc.) to take informed action and *eventually* measure the outputs and impact achieved.** This allows cities to assess and report on *intermediary* results achieved, while getting prepared for certification; to *self-assess* own performance over time and to *benchmark* their performance against the performance of peer cities using the same catalogue.

6- Supporting vertical integration by building a strong link between national and local governments

Most international tools and reporting mechanisms (e.g. SECAP, Compact of Mayors CarbonRegistry) are established between international bodies and cities directly. **The eea is the only one supporting (and requiring) the establishment of a *strong link between national and local governments*, to ensure that the country-specific catalogue of measures reflects national energy targets, regulation and policies. Its catalogue therefore needs to be adapted and regularly updated to be in line with newly developed laws, policies and support schemes.** Every country (national eea organisation) defines the specific activities to be undertaken by municipal governments to be considered as “well-performing” (reach a min. of 50% on each measure) within the specific national context and based on its real possibilities to act. The (initial and periodic) adjustment of the eea methodological framework of measures and indicators is therefore a prerequisite for new countries and cities to engage in the eea process.

7- Providing a label to certify (and publicly reward) municipal “energy management and performance”

Most approaches provide the basis for (participatory) city planning; few of them offer a framework for monitoring. **The eea is the only approach to provide a certification system based on accredited auditors and linked with a national support structure (i.e. Designated National eea Authority, eea National Office and Label Commission).** Based on the monitoring process mentioned above, cities can reach between 0-100% on each of the 79 measures. Once they reach a certain level of achievements/ impacts (e.g. 30%, 50%, 75% depending on a country’s certification system), cities can be audited, certified and rewarded (e.g. Label Energiestadt in Switzerland, Cit’ergie in France, Pacte Climat in Luxembourg, Jiha Tinou in Morocco). It is up to the countries to eventually link certification with a rewarding system. In Luxemburg for instance, cities with a higher level of certification get more days of technical assistance for free (offered by the national designated eea authority). Certification can also be linked with access to concessional loans, subsidies or other benefits (e.g. study tours, etc.).

Challenges and opportunities related with the eea approach and process

Two major challenges are associated with the eea process: (a) the establishment of a legitimate and financially sustainable **national governance structure** charged with managing the eea national process and certification system (including quality control and continuous adjustment of instruments), based on a solid business-model that ensures the viability of the process, and (b) the development and regular updates to the **national eea framework**, based on an inclusive and participatory process of adjustment, to ensure the relevance, effectiveness and desirability of the eea process and tools.

1- A national support structure expected to be “stand-alone”

Unlike other approaches (e.g. Covenant and Compact of Mayors) that are highly subsidized (by the European Union, the World Bank or other international donors), allowing city governments to directly engage with supra-national bodies, the eea process is a nationally anchored process, implying the establishment of a national framework and support structure for sustainable energy management at the city level. This structure is based on (a) a designated National eea Authority; (b) a National eea Office/ Bureau; and (c) a pool of accredited eea advisors and auditors, all of which however need to be funded. In Europe, the business model is based on cities' yearly contributions (EUR 500,00 – 2 000,00/ city) and public subsidies (e.g. from the Ministry of Energy). In developing country contexts, cities are less willing/ able to contribute financially, thus, alternative/ complementary funding sources/ incentivising mechanisms need to be found.

Thus, while the entry barrier for cities to engage with the eea process is relatively low, **the establishment of an eea (based/ inspired) national process requires an in-depth understanding of national institutions, their respective missions and relations. A designated national eea authority needs to have the ability, legitimacy and willingness to manage the eea process and label system, and to provide adequate support to city governments.** Ideally, the process is tested through a pilot cycle (2-3 years), to be further developed and adjusted based on an initial evaluation.

2- A nationally adapted methodological framework of measures and indicators

Similar to the eea (based/ inspired) national process and support structure, the methodological framework and tools – in order to serve as a nationally recognised and standardised monitoring tool for municipal energy management – need to be adapted during an initial pilot cycle (and repeatedly during following cycles), with the active participation of experts and city representatives. The eea catalogue and grading tool should indeed reflect what is globally desirable and nationally feasible (in each of the 6 areas), given the specific regulatory framework and the opportunities and constraints for city-governments to participate in national policies. It represents an opportunity for national decision-makers to urge or incentivise local governments in adopting newly introduced energy policies (e.g. new building codes) and it reflects the most relevant set of local actions to be taken to achieve national energy targets. **The efforts required for the establishment of a nationally standardised, broadly recognised and accepted national framework of measures and indicators are relatively important, at the beginning and over time: once the initial framework has been established, regular updates are needed to reflect regulatory reforms, the introduction of new national policies and changes in the institutional landscape.**

V. Opportunities for other tools/ approaches to be used in combination with eea

Providing guidance for sustainable energy planning and performance monitoring, the eea is indeed compatible and complementary with other approaches and tools:

- a. By signing the **Covenant of Mayors** city mayors commit to reduce GHG emissions by 20% until 2020. Based on this commitment, cities establish a GHG inventory and a Sustainable Energy and Climate Action Plan (SECAP) focusing on four compulsory areas (Municipal Buildings, Public Lighting, Urban Mobility and Communication) and, depending on opportunities, additional areas such as Electricity/Heat Production, Solid Waste and Waste Water. **The eea catalogue – covering all of the CoM areas with an additional focus on “Internal Organisation” – can be used to facilitate the establishment of SECAPs:** based on its catalogue of 79 measures proposed for all relevant areas (simultaneously considered by the Covenant of Mayors), cities can choose those measures that are most relevant for them, set their own targets and establish an activities programme that is compatible with both the CoM Methodology and templates; and with the eea.

By doing so, **a CoM signatory city can simultaneously comply with the requirements of both approaches and engage in two complementary and mutually supportive monitoring processes:** the eea monitoring process rewarding intermediary results and achievements in all six areas of the eea framework; and the CoM bi-annual reporting of performance indicators directly associated with the SECAP priority actions.

- b. The **Compact of Mayors** can be signed by any eea-committed/ certified city, provided that the city government is able and willing to collect the climate data required for international reporting on the CoM international climate registry platform. Several measures of the eea Catalogue of measures call for the city to collect energy and climate data, e.g. to establish a city-based Energy/ Climate Accounting and Monitoring System; to prepare for well-targeted retrofitting and energy-efficiency intervention in municipal buildings, urban transport or waste management. **Such data – collected during the eea Activities Programme implementation phase – can be directly used for international climate reporting, via the Compact of Mayors reporting platform/ registry.** By signing the Compact of Mayors, an eea certified city can gain international exposure; its success stories will be disseminated among peer signatories, thus facilitate the sharing of knowledge.
- c. Beyond individual linkages with the Covenant of Mayors and the Compact of Mayors respectively, the eea could be effectively combined with the recent global coalition formed between the two: The new **Global Covenant of Mayors for Climate and Energy:** Six months after the Paris Climate Agreement, the two initiatives decided to merge to create the currently “largest global coalition of cities committed to climate leadership, building on the commitments of more than 7 100 cities from 119 countries and six continents, representing more than 600 million inhabitants, over 8% of the world’s population.”¹⁰ The coalition is co-chaired by Former New York City Mayor and UN Secretary-General’s Special Envoy for Cities and Climate Change, Michael R. Bloomberg, and European Commission Vice President, Maroš Šefčovič, and has the support of global and regional city networks, including C40 Cities Climate Leadership Group, ICLEI – Local Governments for Sustainability, United Cities and Local Governments, Climate Alliance, Energy Cities, and Eurocities. The eea being compatible with both approaches, remains a complementary option to this new global coalition.

¹⁰ <https://www.compactofmayors.org/globalcovenantofmayors/>

- d. The World Bank's **TRACE** tool can be used as a complement to the eea, in order to help city governments prioritise sectors and actions for energy efficiency (EE) intervention, based on a quick assessment of under-performing sectors, improvement and cost-saving potentials. A city – already engaged or willing to engage – in the eea can use TRACE to identify priority action, based on a 3-month process of energy benchmarking, sector prioritisation and intervention selection drawing from the ESMAP “playbook” of 60 tried-and-tested energy efficiency measures, and the eea Catalogue of 79 measures reflecting best practice in Europe. **Based on the three-months TRACE Assessment, the city will be able to make an informed selection of measures (e.g. from the eea Catalogue) to achieve the largest possible impact at the lowest cost. The eea framework will further help the city identify additional and complementary areas of intervention (related with urban planning, local governance and cooperation/ communication), engage in a more holistic approach to sustainable energy management, and make sure that high-impact projects build on a solid ground.**
- e. Similarly to TRACE, the **CURB** tool – recently adopted by the Compact of Mayors as the recommended tool for signatory member cities – can be used as a complement to the eea during the planning process: In addition to energy benchmarking and sector-prioritisation (as offered by TRACE, see above), CURB allows the city to simulate the projected energy and emissions of specific climate interventions, set sector-specific local targets based on the *modelling* of “business as usual” scenarios, and prioritise interventions based on expected cost savings, emission abatement and the complexity/cost of implementation. **Once local targets are set, priority measures can be selected from the 79 measures of the eea Catalogue and prioritised based on CURB simulations. The city can further decide to pursue the eea “track” to (a) depolvelop a more holistic energy-climate approach, to (b) engage in regulator monitoring of intermediary results, achievements and impacts, and eventually (c) to get certified.**

VI. Conclusion

The following conclusions can be drawn from the analysis presented above:

- 1- Most of the tools and approaches assessed are complementary, and in some cases overlapping. In none of the cases they are contradictory.
- 2- All approaches pursue the same general objective: support local governments in sustainable energy and climate mitigation planning.
- 3- All approaches are compatible with each other (see Figure 1.0) and complementary to the eea: a city can therefore engage with several approaches (CoM, CURB, TRACE) at a time, and still be considered for the eea.

Schematically, it can be stated that the different approaches emphasise different stages of the planning cycle (see also Annex A):

- Covenant of Mayors, Compact of Mayors and eea stress more than others the importance of an **initial, political commitment**;
- Covenant of Mayors, TRACE and CURB emphasise the need for **quantitative initial diagnostics** (assessment of the municipal energy and carbon profile as a compulsory pre-requisite of sector prioritisation (TRACE, CURB) and the establishment of local energy and climate objectives); the eea proposes an initial energy review based on both quantitative and qualitative indicators; where data is missing, it needs to be gathered as part of the action plan *emerging from* the initial energy review.

- All approaches request the municipal governments to [set up an action plan](#). CoM, TRACE and CURB require that the action plan be based on a Baseline Emissions Inventory (BEI). The eea activities program is based on a SWOT analysis. All energy action plans can be merged or combined into one, and should become an integrated element of municipalities planning documents.
- TRACE, CURB and eea propose a [menu of measures and actions](#) (as a source of inspiration), to allow local governments to define and plan relevant action based on international best-practice;
- The eea is the only one offering (country-specific) tools for [implementation support](#);
- The eea is the only one working with a [constant eea advisor](#) that accompanies a municipality over several years; once a year, he/ she helps the municipality review its energy policy and adjust its activities programme if necessary.
- The eea and the Covenant of Mayors propose a framework for annual [monitoring](#), beyond planning; the Compact of Mayors allows cities to [report](#) impacts on an international climate data platform;
- Only the eea proposes a [certification](#) scheme.

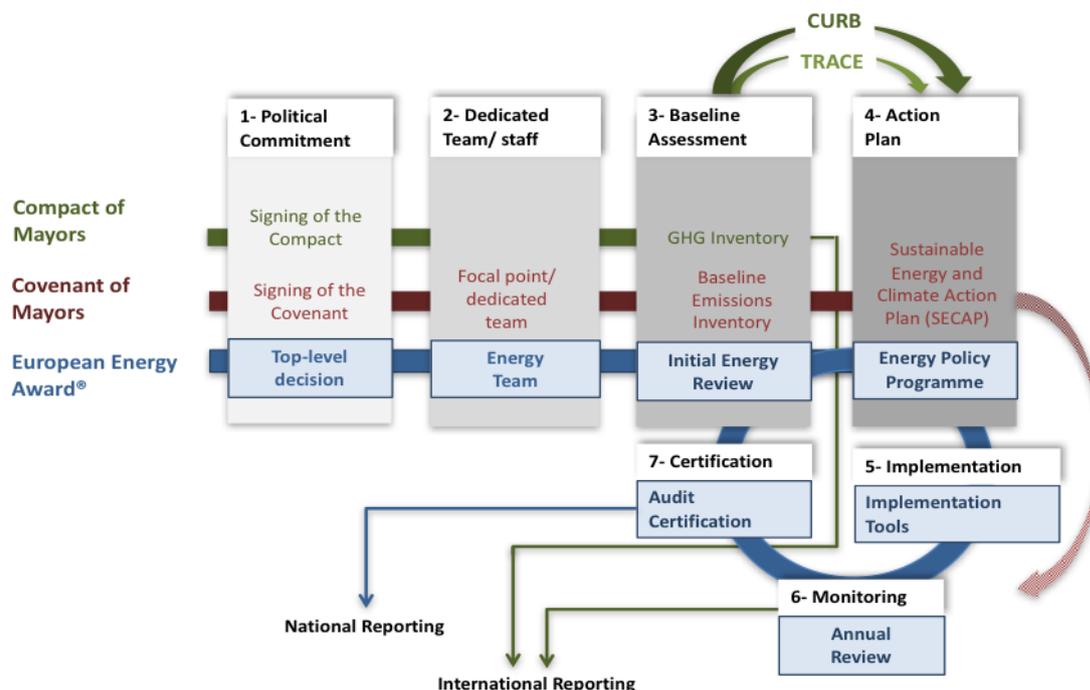


Figure 1.0

The choice of the most appropriate tool remains to the city and its partners. It depends on the type and degree (short-, medium-, long-term) of commitment of a city; of the presence/ absence of committed national authorities willing to support local energy development; and on the city-size: the establishment of a climate detailed carbon assessment/ BEI as a preliminary requisite for planning, for instance, seems to be more relevant in larger cities (with larger projects) than in small cities, where planning priorities can be more easily identified, and with a limited capacity to gather quality (energy/ climate) data at the beginning of the process.

ANNEX A: A comparative analysis of approaches with regards to the Energy Planning Cycle (*and related tools*)

| | European Energy Award | Covenant of Mayors/ SEAP | Sustainable Urban Energy and Emissions Planning (SUEEP) ¹¹ - TRACE | Compact of Mayors CURB |
|-----------------------------|--|--|---|--|
| Governance structure | <p>National process based on the following bodies:</p> <p>Designated national authority required (Public entity, cities' association, private)</p> <p>EEA National Advisors</p> <p>EEA Auditors</p> <p>Interdisciplinary Energy Teams</p> | <p>Covenant of Mayors Office Joint Research Centre, Brussels</p> <p>City-based approach in Europe In Non-European countries:</p> <p>CoM Supporters</p> <p>CoM Coordinators</p> | <p>City-based approach</p> <p>Partnership with national authorities on behalf of the World Bank</p> | <p>Usually a city-based system, but can be applied to other geographic boundaries; no implication of national authorities needed</p> |
| Process | The eea is structured around the (Commit)-Plan-Do-Check-Act cycle (5 steps): | The CoM process is divided in 4 phases and 11 steps: | The SUEEP process is divided into 6 stages and 17 steps: | To comply with the Compact of Mayors, a city has to go through a 4-step process: |
| Commitment | <p>1. Political Commitment</p> <ul style="list-style-type: none"> - National commitment - Local commitment - Set up a Municipal Energy Team (covering all 6 thematic areas, mix of council members and professional staff) | <p>1. Initiation and Political Commitment</p> <ul style="list-style-type: none"> - Political binding commitment and signing of the Covenant¹² - Adapt city administrative structures (designated team, CoM coordinator) - Build stakeholder support | <p>1. Commitment</p> <ul style="list-style-type: none"> - Create a Vision Statement - Establish Leadership and Organization - Identify Stakeholders and Links | <p>1. Commitment</p> <p>A mayor may register via the standard reporting platforms or email for his/her submission to be proceeded.</p> |
| Diagnostic | <p>2. Initial Energy Review</p> <ul style="list-style-type: none"> - SWOT Analysis of the Municipal energy policy, achievements, on-going and planned initiatives, available data (<i>snapshot of existing structures, processes, projects and data</i>) | <p>2. Planning</p> <p><i>Baseline Review</i></p> <ul style="list-style-type: none"> - Assessment of the current framework: GHG Inventory | <p>2. Urban Energy and Emissions Diagnostics</p> <ul style="list-style-type: none"> - Energy and Emissions Inventory - Existing Projects and Initiatives Catalogue - Potential energy and emissions projects assessment | <p>3. Inventory</p> <ul style="list-style-type: none"> - GHG emissions inventory based on GPC methodology - Identification of climate shocks and stresses - Report on both via CDP/ carbon reporting platforms |
| Target setting | <p>3. Activities program</p> <ul style="list-style-type: none"> - Set targets (short, medium, long term) - Establish an activities program - Identify funding sources | <p><i>Goal setting and planning</i></p> <ul style="list-style-type: none"> - Establish a vision - Elaborate a Sustainable Energy Action Plan (SEAP) - Plan for approval and submission | <p>2. Goal Setting</p> <ul style="list-style-type: none"> - Make the Case for Sustainable Urban Energy and Emissions Planning - Establish Goals - Prioritize and Select Projects | <p>3. Target-setting</p> <ul style="list-style-type: none"> - Update the GHG inventory to include the water and informal sectors - Set targets to reduce GHG emissions - Conduct a climate change emissions assessment, and report |

¹¹ TRACE has often, but not exclusively, been applied in connection with the World Bank/ SUEEP approach, which can be compared with other planning processes (but is not further discussed in this paper). http://www-wds.worldbank.org/external/default/WDSContentServer/WDSP/IB/2013/09/19/000442464_20130919113535/Rendered/PDF/811110PUB0Gree0Box0379830B00PUBLIC0.pdf

¹² Commitment to reduce GHG emissions by 20% by 2020 (based on a year of reference, and compared to a business as usual scenario)

| | European Energy Award | Covenant of Mayors/ SEAP | Sustainable Urban Energy and Emissions Planning (SUEEP) ¹¹ - TRACE | Compact of Mayors CURB |
|----------------|---|--|--|---|
| Planning | | - Identify financial resources | 4. Planning: Energy and Emissions Plan - Draft the Plan - Finalize and distribute the plan | 4. Plan Establish an action plan that shows how to deliver on the city's commitment to reduce GHG emissions and adapt to climate change. → The establishment of the action plan is based on the CURB tool simulating expected climate impacts of planned actions (see below). |
| Implementation | 4. Implementation and Monitoring Guidance and advisory services provided within the eea framework depend on specific countries. Most countries provide an implementation support toolkit and case studies for each technical area/ measure to be shared between peer cities. | 3. Implementation <i>No specific guidance</i> | 4. Implementation - Develop Content for High-Priority Projects - Improve Policy Environment - Identify Financing Mechanisms - Roll out Projects | n/a |
| Monitoring | 4. Monitoring Annual monitoring of progress, based on the standardised eea Catalogue of measures and associated assessment guide (Grading Tool, see below). | 4. Monitoring and Reporting • Monitoring • Reporting and submission of the implementation report ¹³ • In Europe: Monitoring Emissions Inventory (MEI) every fourth year | 5. Monitoring and Reporting - Collect Information on Projects - Publish Status Report | 5. Annual reporting In order to comply with the Compact, annual data reporting is required. |
| Certification | 5. Audit and certification (every 4 years) - Audit by eea auditor - eea Silver (50%) and eea Gold (75%) certification | n/a | n/a | - A "Committed" badge : upon registering - A "Compliant" badge : after establishing an action plan (renewable each year) |

¹³ Implementation Report' to be submitted every second year following the submission of the SEAP

| | European Energy Award | Covenant of Mayors/ SEAP | Sustainable Urban Energy and Emissions Planning (SUEEP) ¹¹ - TRACE | Compact of Mayors CURB |
|------------|---|--|--|---|
| Tools | EEA Toolkit: | CoM Toolkit: | TRACE | Compact of Mayors Toolkit/ CURB |
| Commitment | National templates; letter of commitment | Covenant Official Text Official Text outlining the CoM commitments to be approved by the municipal council Covenant Adhesion Form Form to be signed by the Mayor SEAP Guidebook (Europe) Guiding signatories throughout the SEAP development process SEAP Guidelines for South Mediterranean countries (CES-MED) | | Letter of Commitment Guide to compliance Compliance Requirements (→ <i>cCR Offline Reporting Sheet</i>) |
| Diagnostic | EEA Assessment and Monitoring Tools The eea initial energy review is based on the eea Catalogue of 79 measures , reflecting best international practice regarding municipal energy policy, management and performance, and according to a framework of indicators and values (e.g. Monitoring-Grading Tool). User countries adapt the eea Monitoring-Grading Tool to their specific country contexts. The choice of indicators and the weighting of required steps to reach a 100% on each of the 79 measures are based on countries' specific regulations, national targets and policies, institutions and role of local authorities. | CoM Baseline Emission Inventory¹⁴ The Baseline Emission Inventory (BEI) quantifies the amount of CO2 emitted due to energy consumption on the municipal territory (Covenant Signatory) in a baseline year. (→ <i>Conversion factor and IPCC emission factor tables; SEAT Template; Baseline Determination Guide¹⁵</i>) Quick Reference Guide – Grouped SEAP analysis for Covenant Territorial Coordinators | Tool for Rapid Assessment of City Energy (TRACE) 1- Data collection <i>GHG emissions inventory</i> (→ GHG Inventory Spread Sheet ¹⁶) <i>Energy Balance Study</i> : Mapping of primary and secondary energy supply and use (→ Energy Balance Spread Sheet). 2- Energy Benchmarking (→ database of 28 Key Performance Indicators collected from 64 cities) The data are entered into the tool using a web-like interface and analyzed in order to benchmark a city's energy use against peer cities selected based on city population, climate, and human development index. | Global Protocol for Community-Scale Greenhouse Gas Inventories (→ <i>cCR Offline Reporting Sheet; CDP Cities Questionnaire Guidance; C40 Hazard Taxonomy</i>) Climate Action for Urban Sustainability (CURB) Based on a GHG emissions inventory (e.g. Compact of Mayors Procedure) or proxy data, and the collection of complementary/ extra data, the CURB Tool allows the city to simulate emission/ energy demand trajectories over time/ up to a certain time horizon (e.g. 2020, 2030, 2040). |

¹⁴ Covenant of Mayors (2010) "How to Develop a Sustainable Energy Action Plan (SEAP)—Guidebook" (http://www.eumayors.eu/IMG/pdf/seap_guidelines_en.pdf).

¹⁵ http://www.energymodel.eu/IMG/pdf/IL_4_-_Baseline.pdf, part II.

¹⁶ Based on the Local Governments for Sustainability's (ICLEI) "International Local Government Greenhouse Gas Emissions Analysis Protocol" (2009), which follows principles of the Intergovernmental Panel on Climate Change's (IPCC) "2006 Guidelines for Greenhouse Gas Inventories" (2006).

| | European Energy Award | Covenant of Mayors/ SEAP | Sustainable Urban Energy and Emissions Planning (SUEEP) ¹¹ - TRACE | Compact of Mayors CURB |
|----------|--|---|--|---|
| Planning | <p>EEA catalogue of 79 measures</p> <p>The eea catalogue is a standardized list of measures and indicators; the 79 measures reflect best International/ European practice in each of the 6 areas considered. Cities are expected to use the 79 measures as a source of inspiration, and as a basis for target setting and planning, based on the specific opportunities and constraints identified during the initial energy review.</p> <p>(Tool: <i>Activities Program Template</i>)</p> | <p>Baseline Definition Guide</p> <p>Guidebook “How to develop a Sustainable Action Plan” Step-by-step recommendations for the entire process of elaborating SEAP and local strategy. Divided in 3 parts: (1) description of the overall SEAP process; (2) guidance on how to elaborate the BEI; (3) description of technical measures for implementation</p> <p>SEAP Template Supporting template to establish a SEAP</p> <p>Quick Reference Guide – Joint Sustainable Energy Action Plan for collective action plans of several cities.</p> <p>Report on existing methodologies and tools (mentioning EEA, among others)</p> <p>SEAP Submission & Verification Processes Describing SEAP Submission & Assessment Process</p> <p>Guidelines for Covenant Supporters Overview of key roles and activities to be undertaken by networks of local and regional authorities – as supporters</p> <p>Guidelines for Covenant Coordinators</p> | <p>3- The Sector Prioritization</p> <p>Module using "<i>relative energy intensity</i>," "<i>sector energy spending</i>," and "<i>city authority control</i>" to prioritize sectors with the most significant energy efficiency potential*.</p> <p>*The "sector spending function" allows the user to enter the total amount of money that the city spends in the sector, and the "city authority control" function allows the user to indicate the amount of control that the city authority has in the sector. The "relative intensity function" shows the potential energy efficiency improvement the city may realize if it were to match the average of better-performing cities.</p> <p>Based on these functions, TRACE provides a prioritized list of sectors that the city can engage in order to realize potential energy savings.</p> <p>4- Intervention Selection</p> <p>TRACE contains a set of 59 energy efficiency interventions combining high-level strategic level programs and specific activities that a city can pursue. Recommendations are supported by a database of 191 case studies. <i>Each recommendation is "rated" on 3 attributes: (a) energy savings potential (b) first cost (c) speed of implementation.</i></p> <p>Additional tools:</p> <ul style="list-style-type: none"> - Project Assessment - Prioritization Toolkit | <p>Climate Action for Urban Sustainability (CURB)</p> <p>Based on the projected GHG emissions/ energy demand trajectories, the CURB Tool allows the city to establish its own emissions/ energy demand targets (e.g. target emissions trajectory curve).</p> <p>The city can compare the performance of specific sectors with those of other cities (i.e. Key Performance Indicator of Public Lighting) (with a similar Human Development Index) → out of the C40 network.</p> <p>The CURB Tool then helps the city prioritize action areas, on the cost-efficiency/ saving potential, emissions reduction potential, and difficulty of implementation. The potential impacts (on emissions and electricity use) can be simulated based on specific (technology) solutions (e.g. generalized use of LED, shift to recycling).</p> <p>Once the city has selected all of its actions, CURB compares the cumulative impacts of that scenario with the city's reduction targets.</p> |

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|----------------|---|--|---|------------------------------------|
| Implementation | <ul style="list-style-type: none"> - eea Catalogue of 79 measures - Database of good practices with 1400 municipalities (access for eea advisors) - Country-specific toolboxes, e.g. <p>www.citedelenergie.ch</p> <p>www.citergie.ademe.fr</p> <p>www.pacteclimat.lu</p> | <p>Guidebook, part III: Technical measures for energy efficiency and renewable energy</p> <p>Overview of measures to be taken in key sectors: building, lighting, heating/cooling, industry, electricity production, district heating/ cooling, office appliances, biogas, demand side management, energy audits</p> <p>Quick Reference Guide – Financing Opportunities for Local Sustainable Energy 2014-2020</p> | n/a | n/a |
| Monitoring | <p>EEA Assessment and Monitoring-Grading Tool (= tool used for the initial energy review)</p> | <p>Reporting Guidelines on SEAP and Monitoring for signatories</p> <p>Monitoring Template</p> <p>Template to support reporting of SEAP progress¹⁷</p> <p>Quick Reference Guide – Monitoring SEAP implementation</p> | n/a | cCR Offline Reporting Sheet |
| Certification | <p>EEA Assessment and Monitoring-Grading Tool (= tool used for the initial energy review)</p> | n/a | n/a | n/a |

¹⁷ http://www.eumayors.eu/IMG/pdf/New_Monitoring_Template.pdf.

Annexe B – Web Links

European Energy Award

<http://www.european-energy-award.org>

eea catalogue of 79 measures

http://www.european-energy-award.org/fileadmin/Documents/eea_measures_EN_2012.pdf

Some examples of National EEA Authorities:

<http://www.citedelenergie.ch> (Switzerland)

<http://www.citergie.ademe.fr> (France)

<http://www.pacteclimat.lu> (Luxemburg)

Covenant of Mayors

http://www.covenantofmayors.eu/index_en.html

Official text: http://www.covenantofmayors.eu/IMG/pdf/covenantofmayors_text_en.pdf

Guide: How to Develop a Sustainable Energy Action Plan (SEAP)

http://www.eumayors.eu/IMG/pdf/seap_guidelines_en.pdf

http://www.energymodel.eu/IMG/pdf/IL_4_-_Baseline.pdf

http://www.eumayors.eu/IMG/pdf/New_Monitoring_Template.pdf

Compact of Mayor

<https://www.compactofmayors.org/globalcovenantofmayors/>

Guide

http://www.compactofmayors.org/content/uploads/sites/14/2015/07/Compact-of-Mayors-Full-Guide_July2015.pdf

Sustainable Urban Energy and Emissions Planning (SUEEP) – TRACE

<http://www.esmap.org/TRACE>

The Local Governments for Sustainability's (ICLEI) "International Local Government Greenhouse Gas Emissions Analysis Protocol" (2009) -> <http://archive.iclei.org/index.php?id=ghgprotocol>

Principles of the Intergovernmental Panel on Climate Change's (IPCC) "2006 Guidelines for Greenhouse Gas Inventories" (2006) -> <http://www.ipcc-nggip.iges.or.jp/public/2006gl/>

SUEEP: <http://siteresources.worldbank.org/INTURBANDEVELOPMENT/Resources/336387-1369969101352/Ostojic-et-al.pdf>

Climate Action for Urban Sustainability (CURB)

<http://www.worldbank.org/en/topic/urbandevelopment/brief/the-curb-tool-climate-action-for-urban-sustainability>