

GDC Signatory Cities Survey Report

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1 Introduction

This report summarises the context, approach, methodology and results of a survey among the Green Digital Charter (GDC) signatory cities. The aims of the survey are to i) get first hand insight into the green digital situation and activities in the cities, ii) have a first evaluation of the NiCE project and toolkit impact and iii) promote the NiCE online toolkit.

2 The “Green Digital Charter”

Cities today face the unprecedented challenge of achieving environmental, social and economic sustainability. One of the core challenges on this way is tackling carbon emissions. Information and Communications Technologies (ICT) have an important part to play in this process: They are an enabling technology (“ICT for green”) as well as an energy consuming infrastructure themselves requiring efficiency advancements (“greening ICT”).

The Green Digital Charter is a declaration committing signatory cities to working together to deliver on the EU climate objectives through the use of ICT. It therefore promotes progress in tackling climate change through the innovative use of digital technologies in cities.

In addition to a wide range of statements and aims, the Charter focuses on three specific commitments:

- to work with Green Digital Charter signatories on ICT & energy efficiency
- to deploy five large-scale ICT for energy efficiency pilots per city within 5 years from the signature
- to decrease ICT’s direct carbon footprint per city by 30% within 10 years from the signature

The Charter was at the time of the survey (i.e. end of 2013) signed by 41 major European cities. Access to the Green Digital Charter is open to all local authorities democratically constituted with/by elected representatives willing to commit to the statements in the Green Digital Charter. The access is regardless of the cities’ stage of implementation of their energy and climate policies.

3 The NiCE Project

NiCE (Networking intelligent Cities for Energy Efficiency) is an FP7 funded project under the lead of EUROCITIES, which supports cities in the achievement of their goals as outlined by the Green Digital Charter and to translate the political commitments into practical and hands-on activities. For more information, see: www.greendigitalcharter.eu/niceproject.

NiCE is supporting cities in three key areas:

- **Tools for cities** - Establishing monitoring and reporting tools for cities to be able to measure their ICT carbon footprint, monitor GDC implementation and link their work to other cities and initiatives; Developing frameworks for action to aid cities at all stages during their efforts towards green digital progress.
- **City support and action** - Offering support to cities through a series of targeted exchange and learning activities (e.g. exchange on best practice examples).
- **Outreach and engagement** - Organising a series of networking and visibility events to increase the number of Green Digital Charter signatories and showcase cooperation opportunities with relevant stakeholders.

Framing green digital action - the conceptual approach of NiCE:

Core elements of the conceptual approach are a framework and associated ontology that structures and underpins the NiCE online toolkit that supports green digital activities for cities. This 'Action Framework' is based on an analysis of the commitments in the Green Digital Charter, European policies, city initiatives and activities, as well as direct feedback from cities.

The Action Framework defines three dimensions of green digital development that together open up a particular 'space for action'. It supports a structured understanding of green digital activities, provides a shared reference for cities to map and monitor their activities, recognise gaps and options for action and exchange experiences. The three dimensions are:

- **Application Areas:** Five key policy domains in which actions for green digital development should be implemented by priority are highlighted: energy, buildings, transport, public lighting and green ICT. Green digital actions that cut across these domains and contributions in other domains (e.g. waste, industrial processes) are also important. Each application area has associated 'subdomains' which are used to categorise all activities, tools, Charter commitments etc. These subdomains have also been mapped onto the Covenant of Mayors (CoM) categories to enable the capture of green digital activities for CoM reporting.
- **Activity Types:** Five basic kinds of activity should be combined to trigger the innovation dynamics in terms of green digital development, namely governance,

policies, exchange, measurement and operational activities. Covering and coordinating these different activity types is a fundamental requirement and thus guides local action. Each activity type has associated ‘subdomains’ which are used to categorise all activities, tools, charter commitments. The activity types were finally also used to structure the self-assessment questions to support stock taking and monitoring of green digital progress.

- **Roles of ICT:** Four kinds of contributions of ICT are identified that can be made within each activity type and application area. ICT can be used to simply enhance efficiencies, but it may also foster data analysis and decision making, support a shift in perceptions and behaviour, or enable innovation and transformation of processes or lifestyles.

The following matrix (Figure 1) attempts to visualise these 3 interlinked dimensions. Each ‘cell’ within the matrix is representing specific green digital actions, defined by the three dimensions (e.g. Innovation in Energy Measurement). Starting from single practices in any of these boxes, cities can thus use the framework to expand activity types in a given domain, transfer and broaden perspectives and activities towards other domains, or gradually explore new roles of ICT.

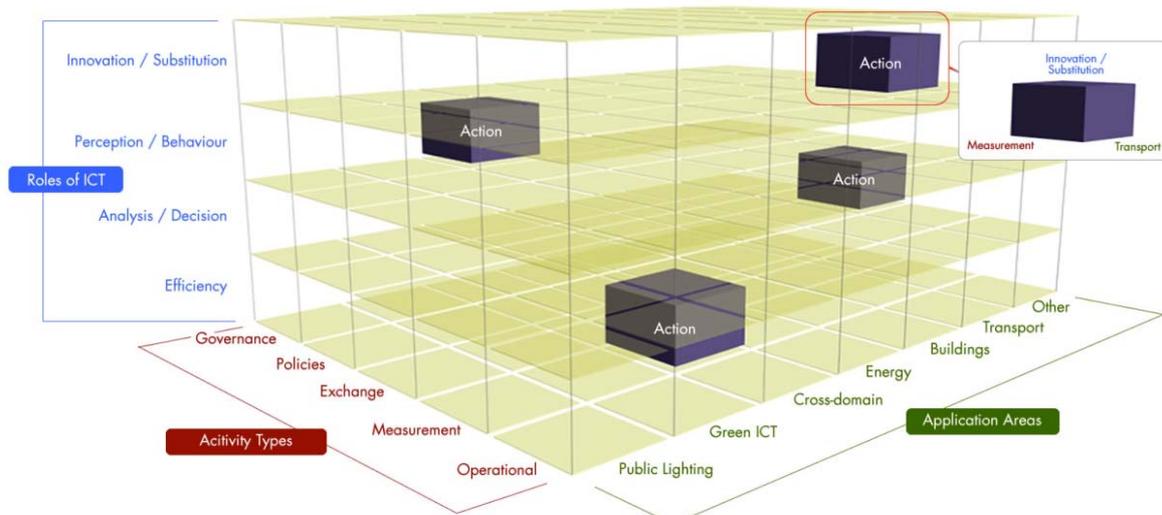


Figure 1: The Green Digital Action Framework; NiCE Green Digital Action Guide for Cities, 2013

In the context of the survey the Action Framework was also used as a reference to structure the issue of green digital activity in the course of the interviews.

4 Telephone survey: Objectives and approach

Objectives: To accomplish the objectives of the project, the survey had three main objectives:

- Get first hand insight into the green digital situation and activities in the cities, i.e. before and after signing the GDC;
- Evaluation of NiCE (project and toolkit) impact: focus on the NiCE project (project team; support) and toolkit (autonomous work of the city with the website; networking with other cities based on the toolkit);
- Promote the NiCE online toolkit.

Methodology: The interviews were conducted as semi-structured telephone interviews. This approach was considered more effective than e.g. a standardised online survey in order to get as much specific experience and qualitative feedback from the cities as possible.

Addressees: Green Digital Charter representatives of GDC signatory cities (contact through signatory cities' database from EUROCITIES).

Core Research Questions: The core research questions reflect the objectives of the survey.

Section: Green digital (GD) and the Green Digital Charter (GDC) in general:

- Which (major and best practice green digital) activities are ongoing? Which were triggered by the GDC-process (i.e. large scale projects, CO2-reduction)?
- What are / have been important drivers (and barriers) concerning the green digital process and progress?
- What kind of benefit do cities expect / gain from European commitment and networking on green digital action, i.e. by signing the Charter?

Section: Involvement in and experience with the NiCE project:

- What kind of benefit do cities expect / gain from European networking on GD action through involvement in the NiCE project - i.e. study tours, training, roadshows, etc.?
- What kind of benefit do cities expect / gain from European networking on GD action through the NiCE online toolkit - i.e. a) sharing knowledge, activities, and tools and b) feedback and monitoring through self-assessment and reporting tools?

Sample: Drawing on the EUROCITIES GDC database, 41 signatory cities (the survey was designed and scheduled before Glasgow signed the Charter) have been contacted via email. A telephone contact was arranged with 34 cities. As a result, telephone interviews were carried out with 18 signatory cities and 13 of these telephone interviews were of good quality. Five telephone interviews are of lower data quality as those GDC representatives were not very involved in their cities' daily green digital action and progress. Unfortunately it was not possible to talk to other contacts in these cities. So as a first general result, it is worth mentioning that many respondents felt a great deal of uncertainty as to specific issues.

In several cities the telephone interview was declined with the explanation that the Green Digital Charter progress have not yet shown tangible results; in some cases the suggestion was to have a telephone interview at a later point in time (beyond the time frame of the NiCE project). Some Green Digital Charter representatives declined to have a one-to-one telephone interview as they did not feel able to discuss central city strategies.

There were a number of challenges to be faced in undertaking the survey, including:

- a) Contacting the cities and scheduling appointments has taken a lot of time, because of:
 - o no return calls from several signatory cities despite several attempts to contact every city including mails and voice-box messages;
 - o the representatives of the Green Digital Charter did not have time;
 - o recent change of the person acting as the Green Digital representative.
- b) Conducting the interviews was sometimes very difficult, because:
 - o the Green Digital Charter representatives didn't feel responsible for the telephone interview (topic) or claimed to have no mandate;
 - o the Green Digital Charter representatives sometimes had little knowledge about the green digital topic in general.

The results of the interviews are presented below. According to the semi-structured approach, we tend to consider the results as qualitatively describing a set of instructive case studies and forming a basis for the generation of hypotheses rather than allowing generalisations in terms of statistical representativeness. However, we also indicate quantitative relevance where appropriate.

5 “Green Digital” in European cities - Results of the interviews

5.1 *The Green digital activities in the cities*

Even before the semi-structured interviews started, we learned from the initial screening that the interviewed cities are at very different levels of development concerning their daily green digital and the Green Digital Charter progress. In several cases this was a determining factor for the quality of the interviews. Moreover, city representatives that have a heavy workload cannot afford to invest time in activities that don't have a direct and immediate benefit to their everyday administrative tasks. The interview questions had to consider these differences. Taking this into account, the interviews commenced with the open question: “How would you describe your city’s overall situation concerning your cities green digital progress?”. By formulating the question in this way we ensured that cities have the possibility to answer in an open way and point out their own thoughts about green digital activities in their cities.

As a first feedback, nine cities took a positive view on their green digital situation and described their situation as “having a good progress”. Beyond that, two different general perspectives of the green digital situation could be identified. The first one is a merely political perspective, while the second one is an operational one. The political perspective is mainly focused on strategies and political actors. The operational one is focused on actions like pilot projects, ICT projects linked to transport or buildings, “smart” projects, etc. Only three cities have not reflected on their political situation and only three cities have not reflected on their daily operational green digital practice. Twelve cities mentioned both the political and the operational perspective. A detailed overview of the answers is given in table 1:

Table 1: Perspectives of cities on overall green digital situation (n=18, multiple categorisation possible).

Focus of the answers	Number of cities	Examples mentioned
Political Perspective		
No political perspective mentioned	3 cities	-
Focussing political strategies / Commitments	12 cities	Low Carbon Programme Carbon Roadmap Digital Agenda ICT strategy paper Combination of different strategies (like CoM, SEAP, ...)
Gathering political actors	4 cities	Green movement Actors giving increasing priority to green digital Politicians striving to become a smart city Actors aiming for improvement of cross-sectorial decision-making
Operational Perspective		
No operational aspects mentioned	3 cities	-
General ICT projects along the Action Framework Application Areas	9 cities	Energy Efficiency in Low Income Housing Electro-mobility project Innovative ICT solutions to save energy costs New data processing centre Redevelopment of buildings
"Smart City" projects mentioned	6 cities	Smart Spaces Smart City project Smart Buildings Smart Grids Smart metering
Pilot projects	2 cities	Testing new technology and projects concerning behavioural change (smart metering) Carbon literacy programme
Projects measuring carbon footprint	7 cities	Measuring carbon footprint Advancing open data
Projects concerning behaviour change and consumer integration	3 cities	Consumer integration with real time consumption monitoring (smart metering)

Beside the strategies and actions concerning their green digital situation, the interviewed cities have also expressed several problems that they experience:

- Five cities described a “gap” between the digital progress (ICT) and general city development and planning activities;
- Three cities argued that they do not have a green digital (green ICT) strategy. In those cases, ICT is more a solution to particular problems without a long-term strategy;
- One city mentioned that it did not work particularly on green digital targets, but on green targets with some aspects “where ICT comes to green”;
- One city argued that large GDC- related projects are allocated to one city department with a thematic focus. This makes a holistic green digital work much more difficult or impossible in such cases;
- Most cities experience a shortage in time and human resources. This aspect is mainly reflected below under “Drivers and barriers”.
- Four cities underlined the need for more coordination of green digital activities in their cities.

5.2 Variety concerning “green digital” terminology, definitions and approaches

The term “green digital” as well as the notion of “intelligent” or “smart cities” is at the conceptual core of the Green Digital Charter and the NiCE project. However, when talking about green digital activities in cities, a variety of different terms was used, like “Sustainable City”, “Green City”, “Low carbon City” or “Climate-neutral City”. It was not really possible to focus the interview on the green digital term as defined in the NiCE project with the two concepts “ICT for green” and “greening ICT”. The term “green digital” seems to be complex and difficult to grasp for most respondents. Only four cities talked about “green digital” explicitly.

It is therefore very difficult to identify a clear “green digital” definition or concept in cities. It rather seems to be a field of great uncertainties, where different concepts, ideas and approaches emerge and exist often side by side and are not yet really integrated. The development of green digital in European cities is still at an incipient stage - at least in terms of a concept for reflection.

5.3 Drivers and barriers

Another issue investigated during the interviews was to identify the main drivers and barriers for green digital progress from the cities point of view.

An overview of the main drivers and barriers identified during the interviews is given in table 2 below. Looking at the results, it is important to bear in mind the different levels of green digital progress in the cities, going from *"we have improved this area"* to *"green digital is now just being tested."* Cities - at an early stage of their "green digital" development - might be unable to properly reflect on the specific drivers and barriers in their cities. However, all in all and although the economic issues have a considerable importance, actor-related factors seem to predominate.

Table 2: Overview of main "green digital" drivers and barriers, based on the interviews (n=18, multiple categorisation possible).

Drivers	Number of cities	Barriers	Number of cities
Economic Issues		Economic Issues	
Examples: -Economic growth -Cost (budget) savings through ICT	7 Cities	Examples: -Dependence on economic growth -Bad financial situation -Limited economic and human resources	10 Cities (for 6 cities economic features are a driver and a barrier at the same time)
Actor related Issues		-----	
Examples: -High political interest -Continuity and flexibility of the politicians - Low carbon targets -political commitments <i>"Local stakeholders are the drivers to push ICT forward."</i>	11 Cities		

Drivers	Number of cities	Barriers	Number of cities
Governance Issues		Governance Issues	
Examples: -Progressive green community and citizens - Advanced cooperation <i>" Work forward for a greener city."</i>	6 Cities	Examples: -Lack of communication between decision makers -Lack of cooperation <i>" Each department does its own thing and does not want to be responsible for mistakes of other departments."</i> <i>" No green team inside the city, yet."</i>	5 Cities
Monitoring		Monitoring	
Examples: -Open Monitoring and information to raise awareness of green ICT possibilities	3 Cities	Examples: -Lack of knowledge how to monitor -Difficulties with open data	2 Cities
Local Infrastructure		Local Infrastructure	
Examples: -Necessity to renew local infrastructure opens windows for green ICT	1 City	Examples: -Bad situation of local energy infrastructure -Complicated building structure causes delay in retrofiting	2 Cities
Environmental Situation		-----	
Examples: -Necessity of sustainable development and environmental protection supports the use of green ICT	6 Cities		
Quality of life		-----	
Examples: -Necessity to improve living standards and rising energy prices open windows for green ICT	3 Cities		

Drivers	Number of cities	Barriers	Number of cities
Marketing of the city		-----	
Examples: "Green, save and smart city." "green inspired" "Climate Alliance" "Want to be proud of their own city."	4 Cities		
Local ICT Research		-----	
Examples: -Technical research in local universities -Necessity of ICT nowadays -EU ICT projects	3 Cities		
Local PPP		-----	
-Public private partnership -Cooperation with local companies	2 Cities		
Cities which mentioned no drivers: 0 City			
Cities which mentioned no barriers: 2 Cities who said "It is hard work, but the results will come, sooner or later."			

Several cities argue that in particular economic issues, actor-related issues, and governance issues can be both a driver and a barrier, even within one city. For instance, the political actors can be interested and innovative for "green digital" or there could be a lack of green awareness in the city.

5.4 *The Green Digital Charter - Trigger for green digital action?*

Having already experienced from the cities that “green digital” is a quite complex phenomenon in European cities, we have been interested in the question, whether: “**the Charter process leads to any specific new initiatives or projects?**”. On a first analysis of the responses it does not appear that the Green Digital Charter is a particular trigger for green digital action. No cities interviewed specifically mentioned that signing the Green Digital Charter was directly linked to any specific new initiative or project. Sixteen cities emphasised that, while the Green Digital Charter did not directly lead to new initiatives or projects, it has a general stimulating influence on the wider green digital process and progress. Signing the Charter led to making green ICT more popular, to strengthening the focus on ICT features and in particular raising awareness for linking green and digital.

Similar aspects are also reflected in the answers to the question: “**Which were the reasons for signing the Green Digital Charter?**”. There are different reasons the cities mentioned:

- Six cities said it is to reinforce their work on green digital topics and current green digital activities in their city;
- Five cities signed in order to progress green digital activities in their city;
- Six cities signed to give a political/strategic impulse to green digital activities;
- Nine cities signed in order to be involved in an exchange and learning network.

Cities benefit from the NiCE project and the NiCE online toolkit

The second part of the interviews concerned a first evaluation of the NiCE project impact in the cities. The NiCE project provides several information services for European cities. The offer of NiCE technical trainings, roadshows, study tours generally enables cities to be updated on green digital initiatives and options for action and get in contact with other European cities. So: **How are the interviewed cities involved into the NiCE project?:**

- In addition to the interviewed Reference Cities of the NiCE project who are naturally involved into the project, nine cities got involved through NiCE (3) and EURO CITIES (6) events. With respect to the latter in particular the EURO CITIES Knowledge Society Forum (KSF) meetings were mentioned;
- Five interview partners did not know whether there was an involvement of their cities in NiCE at all;

- Three cities have not been involved in the project until now;
- Two cities mentioned that they wanted to be more involved: *"We try to stay engaged, but the involvement is on and off."*;
- One city described its involvement in the project, due to the activities on the NiCE online toolkit.

The NiCE online toolkit combines a directory of practical implementation tools with monitoring and reporting tools to support green and digital activity and delivery of the Green Digital Charter. The question was: **"What kind of experience do the interviewed cities have with the NiCE online toolkit?"** :

- Seven cities have no experience with the toolkit;
- Three of them argued that they had too little time and human resources to use the toolkit;
- Six cities (amongst them two NiCE Reference Cities - RCGs) consider working with the toolkit as a helpful experience;
- Three of them (including two RCGs) found the toolkit very useful concerning exchange and mutual learning;
- Some criticism was expressed from seven cities, including some cities arguing that there is not enough promotion of the toolkit or that the toolkit is not public.
- Cities also mentioned that there is a lot of tools similar to the NiCE toolkit. It makes it difficult to handle these different involvements (*"There are so many places to network, to get information"*).

6 Summary

The survey shows that the Green Digital Charter provides a lot of ideas and starting points for green digital activities and actions in cities. This is why political commitments like the Green Digital Charter are generally useful for cities to agree on and support implementation of respective activities. Each city is different, however, with respect to green digital progress achieved and options for further targeted initiatives. All in all a concluding impression is that the development of green digital in European cities is still in an incipient stage. With a few exceptions most interviewed cities do not yet seem to have a clear strategic and operational plan for the implementation of the Green Digital Charter and their green digital progress, although most cities claimed to be making good green digital progress. This conclusion is in line with one of the core results of the recent

“Comparative Study of Smart Cities in Europe and China”: “Most smart city projects are actually addressing the implementation of individual solutions to individual problems identified in a community rather than comprehensive overhauls of the way cities are managed.”¹

As a result, the practitioners seem to be left alone in cities with a multitude of ongoing activities but with too little coordination and synergy. Due to the multiplicity of environmental and ICT orientated activities, the interviewed cities are also involved in several networks (for a list of other networks see for example also the NiCE exploitation plan). That, together with a reported shortage of personnel and funds, is one important reason for the low involvement of the interviewed cities in the NiCE online toolkit.

As a final conclusion, the survey shows that “green digital activities” in the urban development and planning of European cities is still at an early stage. This is a challenge which can be taken up by signatory cities, supported by EURO CITIES, perhaps building upon the finding that the Knowledge Society Forum (KSF) was mentioned by many cities as a particularly useful way of networking and knowledge exchange around green digital policies and projects.

¹ Kang Yanrong et al. (2014) Comparative Study of Smart Cities in Europe and China- White Paper, prepared for Ministry of Industry and Information Technology (MIIT) and DG CNECT, EU Commission with China Academy of Telecommunications Research (CATR), p. 6;
Available online: <http://eu-chinasmartcities.eu/?q=node/101> (2014/05/19)

7 Annex A - Interview Guideline

The guideline for the telephone interviews encompassed the following questions:

1. How would you describe your city's overall situation concerning initiatives and projects towards green digital progress?
2. From your point of view, what are main drivers and barriers?
3. How did you get in touch with the Green Digital Charter?
4. Which were the reasons for signing the Green Digital Charter?
5. Did the Charter process lead to any specific new initiatives / projects / developments?
6. How is your city involved in the NiCE project?
7. What are the experiences of your city with the NiCE project?
8. Do you know the NiCE online toolkit?
9. How does your city use the possibility to exchange activities and tools?
10. Does your city use reporting tools (particularly) the self assessment tool (and how)?