

What Does Pioneering Mean in Local Sustainable Development? A Decade of Local Sustainability Performance Measurement in the Netherlands

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Thomas Hoppe¹ and Frans Coenen²

Abstract:

“Think global, act local” is a phrase much related to green governance. Since the Earth Summit in Rio de Janeiro and its ‘Local Agenda 21’ in 1992 it is accepted that local authorities have a key role in implementing sustainable development. During the early 1990’s Local Agenda 21 diffused to many countries, including the Netherlands. As a consequence local sustainability reached the national policy agenda, and intergovernmental subsidy schemes and supporting policy instruments were implemented to support local authorities in adopting local sustainability policies and creating ‘local capacity’. One of the measures implemented concerned a tool, the so-called ‘Local Sustainability Meter’, which was designed to both monitor progress and serve as an incentive in terms of ‘naming and blaming’. The data that has been collected since 1999 enables us to conduct a longitudinal analysis on local sustainability progress and dynamics. For instance, insights may be derived on the magnitude and intensity of policy measures that are adopted, and variation therein between local authorities. In this paper we investigate which factors influence local authorities to become pioneers in sustainability governance. We use insights from Diffusion-of-Innovations theory, Public Management and Policy Network theory to categorize local authorities on sustainability performance, and define what pioneering means in this regard. Next, we investigate developments in the Netherlands, what pioneering means in practice, by which factors it is influenced, and the ways in which pioneers distinguish themselves from their ‘mainstream’ peers. The paper offers theoretical elaboration, it presents a historical case study of the Netherlands, as well as results from an explorative statistical analysis. Therewith, the paper contributes to systematic conceptualization of ‘pioneering in environmental policy’, and adds a local- and multi-level governance component to it.

¹ Twente Centre for Studies in Technology and Sustainable Development, Institute for Innovation and Governance Studies, University of Twente, Enschede, The Netherlands; e-mail: t.hoppe@utwente.nl.

² Idem. E-mail: f.h.j.m.coenen@utwente.nl.

1. Introduction

If sustainable development is to be achieved, government must pursue its policy at all levels and scales and through all tiers of the administration. Governments will also have to acknowledge their responsibility at all levels: international, national and local. The local authority plays a special role: it is at the local level that many sustainability problems are manifested. Global issues, like climate change and biodiversity loss, lead to problems at the local level, such as flooding and poor agricultural yields. Although environmental issues manifest themselves at the local level not all local authorities are to the same degree active in formulating and implementing policies to achieve environmental goals, let alone those central to achieving sustainable development. Some are more motivated and active than others in pursuing goals in sustainable development. Among their peers they can be considered the pioneers, and undeniably have an important role in the diffusion of sustainability awareness and policy issues to other local governments. In this paper we are interested in what pioneering in local sustainability means, how pioneer local authorities differentiate themselves from their peers, and what the drivers are towards becoming a pioneer. The paper explores developments in the Netherlands in the 1999-2009 period. We used survey data from a database on local sustainability in the Netherlands: the Local Sustainability Meter (LSM).

To derive an analytical framework that helps us to understand performance of local authorities on local sustainability issues, we will use insights from empirical literature on local sustainability, as well as relevant theoretical insights from the paradigms of public management and policy networks. Next, we use diffusion of innovations theory to develop a classification in which local governments are differentiated between pioneers (early adopters of local sustainability measures) and others who are less advanced. Then, in section 4, we proceed to empirical sections in which we present the case of the Netherlands in the period 1999-2009. We chose the Netherlands because measurement of local sustainability indicators in this nation has been going on for more than a decade. The Dutch case will serve to explore historical developments in the governance style, it will explore differentiation between pioneers and mainstream local governments, and it will serve to explore what pioneering means in practice. The paper is finalized with concluding remarks and suggestions for further research on pioneering in local sustainability. This paper integrates results and insights from previous studies (Coenen and Hoppe, 2010; Hoppe and Coenen, 2011).

2. Theoretical insights useful to understand pioneering in local sustainability performance

The impact that local governments have on achieving environmental and sustainable development goals in local communities is interesting from theoretical and empirical perspectives. In this section we introduce two sets of theoretical explanations for local government performance, the dependent variable concerning 'outcome' (policy results as 'effectiveness') rather than 'output' (local government policy approach or 'set of instruments'). We consider two theoretical approaches relevant. The first one concerns public management, which in this paper especially addresses intra-organizational governmental factors that may affect policy outcome(s). The second theoretical approach concerns inter-organizational factors. This approach is better known as policy networks of multiple actors who have their own interests but are mutual dependent when aiming to achieve collective goals (Heclo, 1978) among which sustainable development may be considered. Insights from these two theoretical approaches, and insights deriving from empirical literature on local sustainability issues will be used to construct an analytical framework which helps further understanding of local sustainability outcome(s). Insights from diffusion of innovation theory are used to develop a classification with which local authorities can be placed on a continuum from pioneers in sustainability on the one extreme to laggards in sustainability on the other extreme.

2.1 Public management, intra-organizational drivers

First, we focus on the impact of the local governmental organization, and improvement in its public service provision. This issue has a background in the quest that governments are searching for ways to improve public service provision, especially by managerial efforts. The argument that organizational characteristics of public organizations – such as local governments - contribute to the achievement of (environmental) policy goals in the local context, is based on the literature on the effectiveness of public service provision (Boyne et al., 2006) and public management (O'Toole and Meier, 2011).

We consider the models that aim at explaining policy effectiveness through the devotion and commitment of autonomous public (and semi-public) organizations. Boyne (2003) did a literature review of quantitative studies published in key international peer-reviewed public administration journals in which evidence was collected in which propositions on the improvement of public service performance were tested. The propositions concerned many explanatory variables, such as: resources (budget, personal capacity, knowledge), regulation, market structure (degree of competition), organization (size, dependency on formal rules, culture, external contracts, contacts with other organizations / ego-network), and management (leadership and expertise, culture, human

resource management, strategy – planning, strategy – content). Boyne found that variation in the explanation of public service improvement were not simply random or beyond scientific explanation. Instead, he found evidence that many results were systematic. Two out of five sets of the explanatory factors emerged as consistent influences on public service improvement. They concerned: (1) organizational resources and (2) management. No systematic evidence was found that validated significant influence by the other three explanatory factors (degree of competition, regulation, and market structure).

Based on the empirical literature on local sustainability performance support for organizational- and public management a few theoretical propositions can be deduced. First of all, a categorization is introduced. There are local authorities which we may regard as pioneers, those that lag behind, and a broad mainstream (Lafferty and Eckerberg, 1998). Pioneers concern local authorities that have succeeded in adopting a broad array of sustainability policy measures. This especially concerns the issue of having built a substantial amount of local capacity and being able to carry out a plan enabling local sustainable development. If adoption of sustainability measures is perceived from an innovation-diffusion perspective it may be stated that pioneering local authorities can be seen as innovators or early adaptors, e.g. 'early market' adopters (Rogers, 1962; Moore, 1991). Second, the international literature describes factors that influence the degree of progress local authorities can make to achieve pioneer status. These factors include items like: municipality size, the role played by the regional government, regional collaboration, a complex knowledge mix, international contacts and partnerships, a full-time expert, and the presence of a clear, 'local catalyst' (or 'local firebrand'). The latter concerns an active public official such as a mayor or alderman who safeguards the interests of sustainable development on the local political and policy agendas (Barrutia et al., 2007; Coenen et al., 1999; Evans et al., 2005, 2006; Hoppe and Coenen, 2011; Kern et al., 2004). What are also regarded as essential to the creation of the 'right conditions' for a pioneer status on local sustainability are important resources such as human capital and funding (grants); the latter often by intergovernmental policy support schemes (Hoppe et al., 2011).

2.2 Policy networks, inter-organizational drivers

It is anticipated that the presence of a policy network in support of the conduct of environmental policy would also provide a stimulus, since it provides a support platform and close contacts with local actors, such as the business community and NGOs. Thus, organizational factors are not the only factors that may influence policy effectiveness in the field local sustainability. Local governments are also depending on the collaboration and the exchange of resources with other actors. In contrast to

the public managerial, (intra) organizational paradigm the analytical emphasis here does not primarily regard the bilateral relation between the local government and one homogeneous target group but a multitude of actors who all have interests of their own. The theoretical paradigm that covers this approach is 'policy networks' (Marsh and Rhodes, 1992; Bressers, 1993; Dowding, 1995; Smith, 1997; Börzel, 1998; Bressers and O'Toole, 1998) and its normative equivalent of 'network management' (De Bruijn & Ten Heuvelhof, 1995; Klijn, 1996; Kickert et al., 1997). The main analytical focus concerns the hypothesis that management of collaborative ties between mutual dependent actors whom exchange resources improves the outcome of public service provision (when policy implementation is concerned). Moreover, the chance that policy goals will be met effectively will be positively influenced if the multitude of actors involved share normative opinions and have a high frequency of interactions (Bressers and O Toole, 1998). In an era of 'governance' rather than 'government' managing of (complex) networks toward achieving public goals, such as local sustainability policy outcomes, has gained importance (Kickert et al., 1997). During the 1990s government has become less hierarchical; hence, ties between actors in local decision-making arenas have become more equal. In local settings decision-making typically occurs in sets of games in which actors negotiate on how to achieve collective goals, given their interests, strategies and interactions (March, 1978; Allison, 1982; Ostrom, 1992). Here, actor-specific characteristics are important as motivation, cognition, resource-usage, power relations, besides actor-interaction and contextual parameters influence game outcomes (Bressers, 2004, 2009). Not surprisingly to the importance of controlling scarce resources, networks often cluster to regulatory systems and budgetary streams, especially subsidy grants (Klijn, 2007).

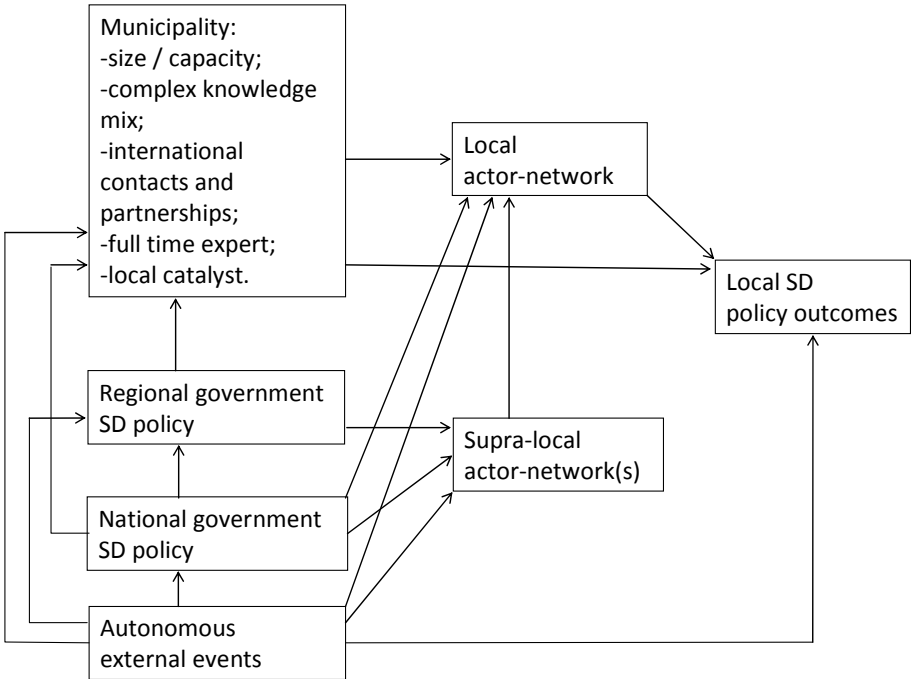
Although the theoretical paradigm of policy networks mainly emphasizes policy-making it has also provided evidence toward explaining local public policy performance (that is to say: policy implementation). Evidence that supports the inter-organizational, network proposition is also found in a number of Dutch studies, on adoption of environmental management systems in local governments (De Bruijn and Lulofs, 1996), and energy conservation goal achievement in residential areas (Hoppe, 2009). Although networks are mostly considered as having a positive influence on local environmental performance, there is also evidence that local networks trigger adverse effects. A study by Hoppe et al. (2011) on energy conservation in residential areas showed that local government interaction with local actors triggers calculative behavior leading to less than optimal ambitions being formulated, as perceived from an environmental stance. Even worse, whereas local authorities did to some degree influence ambition-setting in local housing refurbishment projects to achieve higher energy efficiency levels, there was little evidence that they positively influenced the

actual project outcome (Hoppe et al., 2010). This might indicate that other local actors, their interactions, exchange of resources, rules and games are more important than simply local authorities implementing environmental policy one-sidedly, especially in environmental policy domains in which traditional government policy instruments, such as legislation, are missing. This result corresponds to studies indicating that networking (or: network governance) not only has positive effects towards achievement of public goals (e.g., Meier et al., 2006). In the domain of studies on local sustainable development (in broad terms) there are a few studies that provide evidence which more or less verifies the policy network hypothesis. A study by Barrutia et al. (2007) addressed the claim that policy networks positively influence local sustainability performance.

2.3 Overview of propositions on local sustainability performance

Following the discussions in the previous sections an attempt is made to deduce an analytical model that helps to explain local sustainability outcome(s). In figure 1 an overview of an analytical model is presented with factors we consider influential to understand local outcomes on sustainable development (SD). The boxes from the analytical model will be discussed in detail.

Figure 1: Analytical explanatory model on local sustainability outcome.



First, we assume that municipalities do not only directly influence outcome(s) on sustainable development, as they rather (try to) influence *local actor-networks* in which policy goals are to be

achieved (except for making improvements in their own organisation, for instance improving energy efficiency levels in the municipality building stock). This involves a succession of decision-making rounds in which local stakeholders deliberate, bargain and exchange resources which in turn influences the degree in which sustainability goals will be achieved. To give an example, a local policy network may relate to a neighbourhood housing refurbishment project in which energy-efficiency levels are set to be improved. The owners of the housing blocks – housing associations, owner-occupiers and project developers – are stakeholders and often have other goals than improving energy-efficiency levels and reducing GHG emissions from their property. Many other (financial and societal) issues are at stake, often related to motivation, cognition and power of and between the stakeholders. The context also matters a great deal as issues from other policy domains, decisions taken in the past, trust- and power relationships between the stakeholders influence the conditions in which decisions are made (Kickert et al., 1997; Bressers, 2004, 2009). These conditions may vary from favourable to achieving high sustainability outcomes, to less favourable or not favourable at all. Local authorities try to influence these conditions and rules important to local actor-network decision-making processes by using policy instruments.

The way, magnitude and selection in which those instruments are implemented depend on a number of preconditions on the local authorities' behalf. This depends on resources local authorities have at their disposal. Many of them are related to organizational capacity (which in turn is related to the number of inhabitants in a given municipality). For instance, a study in Germany (Kern et al., 2004) supports the claim that adoption of LA21 policy was predominantly influenced by municipal size. The larger the size of the local government, the larger the personnel capacity, and the more likely that resources can be made available to formulate and implement policy measures on sustainable development. Although *municipality size* gives an explanation to some degree (as an explanation at a high abstraction level) it is not an explanation in itself, as other more specific explanatory factors apply (Barrutia et al., 2007). Local authorities also depend on having a high and comprehensive *knowledge mix* at their disposal. All things considered, the more one knows the more one is capable to understand the complexity in which sustainability problems occur and how they can be solved. Due to frequent personnel turnover possession of a sufficient knowledge mix is at stake in many Dutch municipalities. Because sustainable development concerns problems that are not limited to nation states *international contacts and partnerships* enable local authorities to raise awareness, share experiences and improve knowledge bases to tackle SD issues. It also enables them to contact international pioneers and collaborate with them (and exchange resources) in network settings in order to achieve favourable conditions in achieving subsidy grants. Furthermore, the

presence of a *full-time expert* is important, as staff members need to focus on sustainability issues while not being sucked into other (traditional) policy domain issues, running the risk that SD issues get low-priority when decision-making is going on. The full time expert may have a coordination function and is capable of coping with the broad and comprehensive mix of sustainability issues, while monitoring their progress in several parallel existing local projects. Continuity in tenure of the full time expert is an important requirement. Finally, SD goal achievement needs clear attention in decision-making processes. This involves involvement of political and administrative power. Therefore, the presence of a *local catalyst* is a pre-requisite. This may either concern a political official (a mayor or 'green alderman') or a high level civil servant who is personally motivated, experiential, knowledgeable, and possesses a high degree of authority to keep sustainable development goal achievement on the political, policy and local project agendas (or preferable with both an official and a civil servant). In terms of adoption-diffusion, we may compare this to the social construct of 'opinion leadership' (Rogers, 1962).

Aside from the local context we assume that four different factors affect local SD policy outcomes. *National government* implements *sustainability policies* to enable local communities to achieve local SD. Although several policy instruments apply, intergovernmental covenants and subsidy schemes are emphasized in this regard, such as the multilevel governance VOGM scheme supporting local sustainability from the Dutch historical case that will be presented in section 4.1. More recently, specialized schemes on, for instance local climate policy apply. Moreover, by implementing these multi-level governance instruments national government tries to enable local (and regional) governments to meet expectations on pre-selected SD performance targets (formulated as policy output) and the creation of local capacity. Compliance with these pre-selected targets and installed local capacity are assumed to positively relate to the amount of budget local communities are granted by national government (whom in turn remains influential on the 'what' and 'how' of local SD policymaking). Performance and compliance to pre-set goals are monitored in many schemes, which allows for ranking and consequently 'shaming and blaming'.

Next to national government, *regional governmental* bodies may also affect local sustainability output and outcomes. Depending on their formal decentral authorities regional governments may also have their own sustainability policy frame. Related to other policy domains (spatial policy, water, nature) regional governmental bodies facilitate local communities in decisionmaking, especially on inter-municipality issues. This happens though consultation, facilitation of inter-municipal information exchange discussions, but also by providing subsidies to local projects (in which the local authority takes a prominent role).

Local authorities and other local actors also operate in other networks than the local network. These *supra-local actor-networks* concern professional, regional, national and international actor-networks. This includes network activities organized on one or more topics within the concept of sustainability (for instance LA21, or ICLEI) in which representatives from different local authorities, NGOs, consultants, academics, and national government meet to diffuse professional knowledge and best practice experiences in order to enhance chances of improving local SD outcomes. The essence of these networks may also be perceived as ‘issue networks’ (Hecló, 1978).

Finally, local policy outcomes may be influenced by radical autonomous *external events*, such as extreme weather events (e.g., floodings, earth quakes, droughts, extreme colds, thunder storms), geopolitical events (e.g., wars), or economic events (e.g. hyperinflation, or depression) and their consequences. They require immediate action taken by local authorities and influence how distribution of means is arranged between different SD- and other policy domains.

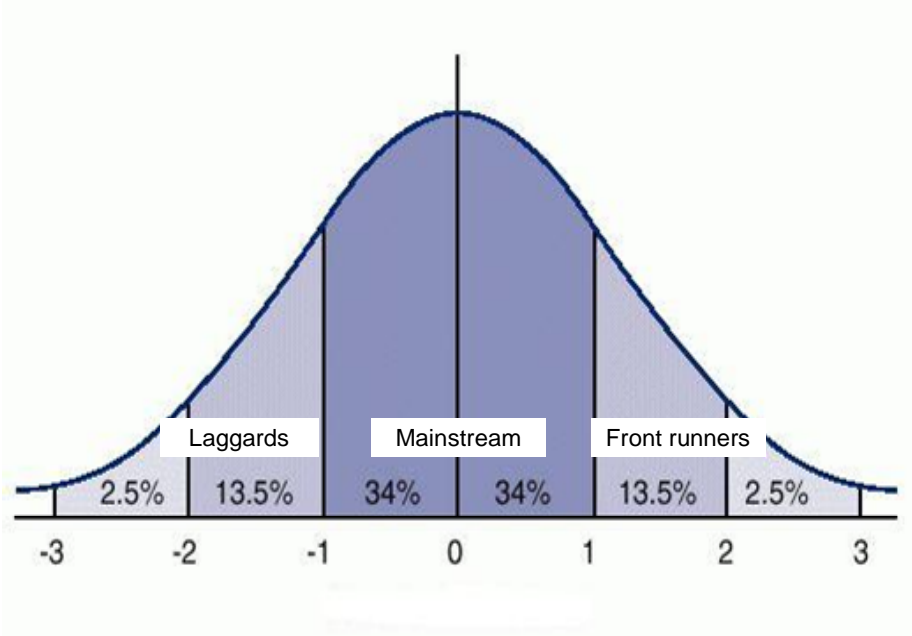
2.4. A categorization of sustainability adopter groups among municipalities

In order to discuss pioneering local authorities in sustainability issues we need to make a distinction among local governments following a theoretical rationale. Our approach to classify local governments is analogous to a classification used by the sociologist Rogers (1962) for the acceptance of innovative ideas, based on both theoretical insights and standard normal distribution. In our case, what is accepted are sustainability measures in the local authority’s policy package (‘policy output’). Rogers assumes that a group of social units is normally distributed according to the way they accept innovative ideas over time. In normally distributed groups pioneers – Rogers calls them the innovators and early adopters – are one standard deviation removed from the statistical mean (on the right – positive - side). In relation to the whole group of local governments, this group is the fastest to incorporate and implement sustainability measures in their local policy. For instance, as compared to mainstream local governments pioneers distinguish themselves by becoming members of international networks earlier (for instance ICLEI, or the Climate Treaty), having formulated outstanding long term policy ambitions (e.g., having all municipality building property at ‘climate neutral’ level by 2020), and committing themselves to only use eco-certified consumption goods.

If one assumes the population of local authorities as a normal distribution, the ‘pioneering’-group involves 16% of the group as a whole. Similarly, of course, we can also distinguish a group of ‘tail enders’ (laggards), one standard deviation below the mean. The group between these and the pioneers are classed as mainstream, in analogy with the term ‘mainstream market’ as used by the innovation theorist Moore (1991). (Here Rogers talks of the ‘early majority’ and ‘late majority’.) This

group comprises 68% of the units in the target population – Dutch local authorities in this case. Figure 2 is a graphical representation of our classification according to the speed with which sustainability measures are accepted.

Figure 2. Classification of units in a social group according to the speed with which an innovative idea is accepted (in this figure front runners may be perceived as pioneers).



2.5. A definition for pioneering in local sustainability

Following the discussions in the previous sections pioneering in local sustainability should be understood as a social construct which can be understood from multiple – theoretical and empirical – perspectives. From an ecological sustainable development point of view local sustainability should include all main elements of sustainable development, basically: people, planet profit (Elkington, 1998). It is not enough for a local authority to be pioneering in just one or two of these three main categories. Moreover, local authorities should enjoy high performance in all three categories, or should have a highly balanced score concerning the average of those. From the Rogers’ categorization it should be clear now that we only consider the top 16 percent of the local authority population on the overall local sustainability scores as pioneers (by this we mean the area of $Z \geq 1$; or at least one standard deviation larger than the statistical mean and more). Given this information we define pioneers in local sustainable developments as those local authorities whom on average perform well on the main elements sustainable development (from the triple bottom line

perspective: people, planet, profit; and sub items), and with this performance score are at least one standard deviation removed from the statistical mean ($Z \geq 1$).

3. Measuring local sustainability

In order to be able to differentiate pioneers from other classes in local sustainability performance data on local sustainable development needs to be collected and prepared in order to generate a data base from which calculations can be made to derive at valid performance scores. Following initiatives to have LA21 implemented in countries like the Netherlands, performance measurement among business firms performance measurement related activities among governmental bodies have taken off. Data collection often takes the form of (voluntary) self-reporting, using online surveys. Motives to local authorities to provide information concern opportunities to report and gain public support by showing more transparency in organizational processes, equity and accountability to stakeholders (Hoppe and Coenen, forthcoming). Although activities have been going on for more than ten years now – see for instance ICLEI in the US - , a general widely supported approach is lacking as there is a large variety across local authorities who prefer to have their own approaches, items and methodologies. This tendency makes it very hard to create a generic approach to collect data on predetermined well-chosen items that reflect sustainability at wide, and provide a basis for valid comparison (Peterson, 2008).

3.1. Development of the Local Sustainability Meter (LSM)

In the Netherlands local sustainability performance is measured by means of the so-called 'Local Sustainability Meter'(LSM). This measurement tool was designed in the late 1990s as an instrument to measure and local sustainability across local authorities in the Netherlands. It was decided to use a common list with items applicable to all local authorities in the Netherlands, mostly reflecting policy output. The LSM was designed by the National Committee for International Co-operation and Sustainable Development ("Nationale Commissie voor internationale samenwerking en duurzame ontwikkeling", NCDO), with financial support from the Ministry of Environmental Affairs. The results of the editions are published by an NGO: COS (de la Court and Aalst, 2002; de la Court, 2003, 2005; COS, 2009). Besides an indicator function, the instrument also had a clear, competitive element that allowed local authorities to gain an insight into their own sustainability score and to compare it with others. The underlying idea was that local authorities would be able to measure themselves against each other and would try to match their own ambitions against the pioneers. A prize was introduced

to reinforce the competitive element, the Sustainability Shield. This was to be presented annually to the local authority with the highest sustainability score, as determined by the points accumulated after completing a questionnaire on policy measures and community capacity. All local authorities in the Netherlands are asked to fill in an online inquiry consisting of 50 to 100 closed-ended questions.

3.2. LSM: items and calculation of scores

In the local sustainability meter questionnaires all the questions have yes/no answers. The more positive responses that are accumulated, the higher the score. Moreover, the questions are weighted, with a measure receiving greater weight for its ambition and/or the way it is established.

Currently, LSM is made up of the three components that reflect to the so-called “Triple Bottom Line”: “People”, “planet” and “profit” (Elkington, 1998). The “people” component comprises citizen participation, social policy and international co-operation. The “planet” part consists of climate, water and nature and the environment. “Profit” embraces sustainable entrepreneurship, sustainable mobility and socially responsible business. Indicators have been set up for each area, which have been operationalized in terms of questions (Hoppe and Coenen, 2011). Across years the items differed as consequence of different policy fashions. Nonetheless, many items remained the same, although shifting between topical components. Because of its practical nature LSM items reflect current periodically bounded policy instruments, especially participation in subsidy schemes or covenants. For instance, a typical question within the climate topical component would be: “Did your local authority participate in the national program on local climate policy making?”

The establishment of the scores-per-municipality follows a basic approach. The more positive the responses that are accumulated, the higher the score. Moreover, the questions are weighted, with a measure receiving greater weight for its ambition and/or the way it is established. A local authority’s total score is calculated as the calculation of the credits attached to items in the questionnaire. After the scores-per-municipality are calculated, a ranking is assigned. The municipality with the highest score wins the Local Sustainability Meter’s annual prize: the Local Sustainability Shield.

3.3. LSM: response

Initially, the Local Sustainability Meter enjoyed only a lukewarm response among the local authorities, with 73 of them participating in the first edition in 1999. In 2000 there were 82 participants, which at that time was just 15% of all Dutch LA’s. In the meanwhile, civil servants (many of them environmental coordinators) complained about the time and trouble involved in completing the wide-ranging list of 74 questions. In the 2004/5 edition (which used data collected over a three-

year period) this meant that 432 of the 467 local authorities in the Netherlands provided data on at least part of the questionnaire, which was divided into different components such as ‘climate’ or ‘international co-operation’. 162 municipalities participated in the 2006–2007 edition (35%). It is interesting that the questionnaire in this edition had a large, one-off extra part, on sustainable consumption. Two years later, the 2009 edition reached 167 local authorities (39%), this time without the ‘sustainable purchasing’ component. As it was thought that many civil servants grew tired of filling in the questionnaire every few years it was decided to hold the inquiry once every four years, or once during each local council’s period of office; a decision taken to increase the likelihood that the questionnaire would be completed. As from 2010 the sustainability meter was also introduced to measure performance from regional governments (provinces). Seven out of twelve provinces participated in the survey. As of recent COS announced that the sustainability meter will also be introduced to measure performance of the Dutch Water Boards (functional administrative bodies).

4. Empirical developments on local sustainability in the Netherlands

In this section we analyze empirical developments in the Netherlands. First, we introduce and discuss developments in governance approaches (sub section 4.1). Second, we study pioneers by analyzing rankings in local sustainability performance over the 1999 – 2009 period by analyzing data from the LSM editions (sub section 4.2). Third, we analyze how pioneers differentiate from their peers (sub section 4.3). In order to do so, we use in-depth data from the 2007 and 2009 LSM editions.

4.1. Governance of local sustainability from the 1980s onwards: an elaboration

In the Netherlands the way in which local authorities are involved with environmental policy and sustainable development has changed over the years, especially since the 1980s (Hoppe and Coenen, 2011). Following the impact of the Brundtland Report and the Local Agenda 21 national government introduced a multilevel governance scheme, VOGM, to support local governments developing local sustainability policies and adopting predetermined policy measures. Furthermore, the VOGM scheme embraced checks and inspections of the municipality councils’ performance, and encouraged collaboration between local governments (Coenen, 2000). It also gave more discretionary authority to municipalities. In comparison with other Western-European countries, the diffusion of Local Agenda 21 to local authorities in the Netherlands was successful as principles were adopted relatively early and by relatively many local authorities. The Netherlands was considered a “pioneer country” (Lafferty and Coenen, 2000). However, as the VOGM scheme ended in 1998, no further

broad-issues subsidy scheme on local sustainability was implemented. In the years following the Millennium Change local sustainability was to be supported in a fragmented manner, following topical sustainable development sub-items, such as sustainable construction, and climate change.

As of today local sustainability governance is influenced by three major changes. In the first place, the narrow focus on environmental hygiene – as practiced until the 1980s - has broadened to embrace sustainable development. The instruments that are used by local authorities have changed as conventional permitting and licensing has been accompanied by other instruments such as information provision, covenanting, environmental management and subsidy schemes. A problematic related issue of importance to local governments relates to external integration of sustainability policy in other policy domains. There is an evident lack of environmental policy integration, and local administrators often do not have the means to keep sustainability issues on the policy agenda. This is a major concern, as environmental policy integration requires careful orchestration and coordination, since environmental goals have to compete with other – mostly economic – policy goals.

Second, the discretionary power of local authorities has changed as they now have wider discretion to determine what environmental goals to pursue and how to do so. However, although local authorities currently formulate local environmental plans, this does not always relate to sustainability issues as yet. This is partly due to a lack of incentives to assist local authorities to formulate their own sustainability policy plans, let alone complying with these plans. Due to lack in capacity, personnel, and in budgets local authorities in fact remain highly dependent on support by national government which runs topical programs on particular subfields of sustainable development to encourage local authorities to adopt local policies; for instance on climate policy or litter reduction. In many cases those programs concern co-financing; unlike previous subsidy schemes, these require local authorities to make additional investments, as they require co-financing. This has the adverse effect of a vast number of municipalities not participating, especially those with few inhabitants. Moreover, the programs come with a strict set of measures which local authorities need to implement. Hence, national government remains to have an important role in supporting local sustainability performance as local authorities highly depend on multilevel governance support schemes.

Third, local authorities are no longer the sole executors of environmental policy, as other de-central and functional governments have also become involved. Moreover, a tendency of national

government in the 1980s was to accommodate environmental policy implementation in regional administrative bodies, so-called 'city regions'. As a matter of fact, a recent discussion concerns the issue of whether local authorities should actually continue to implement environmental policy, or whether responsibilities should be shifted to regional governments.

4.2. The pioneers: rankings

Before discussing what pioneers actually are and how they differentiate from their peers we take a look at who those pioneers actually are. Rankings published by COS allows us to make a few observations and generate a few deductions. In table 1 the top 10-rankings are presented for all LSM editions between 1999 and 2009. In total eight LSM editions were operated during this decade.

Table 1: pioneers in local sustainability; top-ten rankings for 1999-2009.

Rank	1999	2000	2001	2002	2003	2004/5	2007	2009
1	Rotterdam	Breda	Breda	Breda	Breda	Tilburg	Tilburg	Breda
2	Nijmegen	Den Haag	Boxtel	Boxtel	Delft	Delft	Alkmaar	Alkmaar
3	Breda	Almere	Amersfoort	Zoetermeer	Eindhoven	Alkmaar	Leeuwarden	Amersfoort
4	Groningen	Amersfoort	Wageningen	Leiden	Boxtel	Breda	Breda	Groningen
5	Leeuwarden	Nijmegen	Oosterhout	Haarlem	Haarlem	Dordrecht	Ede	Nijmegen
6	Boxtel	Rotterdam	Zutphen	Ridderkerk	Tilburg	Apeldoorn	Oss	Tilburg
7	Tilburg	Apeldoorn	Nieuwegein	Bernheze	Groningen	Eindhoven	Dordrecht	Apeldoorn
8	Amsterdam	Nieuwegein	Heerhugowaard	Nieuwegein	Oosterhout	Boxtel	Groningen	Delft
9	Amstelveen	Tilburg	Leiden	Tilburg	Leiden / Renkum / Zwolle	Hengelo	Bernheze	Tynaarlo
10	Wageningen	Leiden	Leidschendam	Amersfoort		Leeuwarden	Nijmegen	Waalwijk

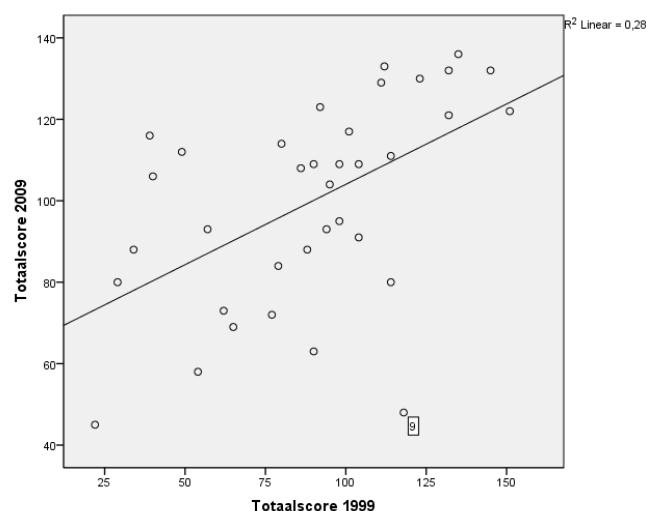
From table 1 there is some clear evidence that a few local authorities tend to be in the top-ten across the ten year span. The municipality of Breda won the Sustainability Shield five times (that is more than half of all the editions!). Other local authorities appear frequently in the top 10-rankings as well: Tilburg (present in all editions), Groningen, Apeldoorn. An important deduction from the rankings table holds that most local authorities present are large-sized municipalities. Next, many top 10 LA's turn out to be located in the region (province) of North-Brabant. This surprises us little as this regional government already encouraged its municipalities to adopt LA21 sustainability measures and policies in the early 90's (Coenen, 2000), and continues to be one of the most active decentral governments in that regard. Furthermore, the province of North Brabant was identified in previous research (Hoppe and Coenen, 2011) as the only one amongst its peers to have a distribution which is positively skewed towards local authorities being pioneers in local sustainability issues. Finally, from the rankings table it appears that some local authorities have periods in which they appear frequently in the top 10-ranking, before disappearing for a while, and re-appearing again after a couple of years. Examples are Rotterdam (after 1999), Nijmegen (after 2001), and Leiden (after 2003). It would be interesting to discover the reasons that explain these sudden time lags. It is also interesting to notice that the two most populated cities in the Netherlands (Amsterdam and

Rotterdam) disappear from the list after 2000, although both of them are still quite active in sustainability issues (especially climate policies), and spend a lot of budget to create awareness across the nation on their programs (on which they claim to be pioneering).

We also analyzed how local authorities which already participated in the first LSM edition (1999) compare to local authorities that only started participating later on. We assume that local authorities that participate early have an advantage as they are more experienced than ‘newcomers’ and are more likely to have a sufficient degree of local capacity, motivated and specialized towards sustainability policy measures. The results from the analysis on comparing means of total scores shows that local authorities which already participated in 1999 (N =30) indeed have higher sustainability performance scores (101.73) than local authorities who did not participate as early as 1999 (N = 106; mean = 84.85). The difference is significant (F = 14.929; p = .000).

Next, we analyzed whether local authorities who performed well in 1999 also did so in 2009. Our analysis indeed shows a significant positive statistical correlation between the two items. It seems like local authorities that performed well early in 1999 indeed also performed well in 2009 (r = .530; n = 36; p = .000; see figure 3). Nonetheless, 72 percent of the linear relationship remains unexplained. Apparently, this large majority of variation in performance scores is influenced by other factors than previous performance of a decade ago. It is also interesting to find out which factors determine the outlier in the figure 3 plot (observation case ‘9’).

Figure 3: linear relationship between performance in 1999 and performance in 2009.



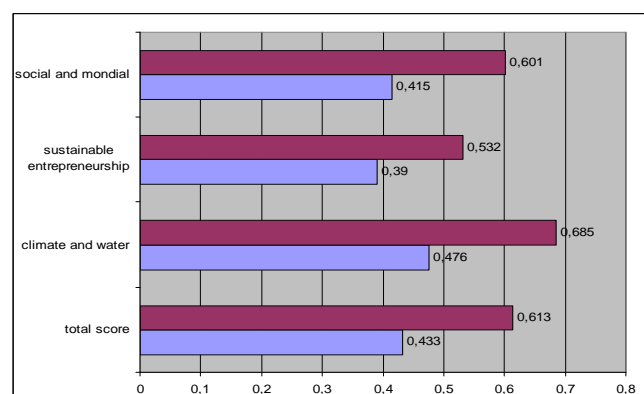
4.3. Differentiation between pioneers and mainstream peers

In this section we discuss differences between adopter categories (laggards, mainstream and pioneers; see for methodological details Hoppe and Coenen, 2011). Due to the availability of extensive data we are able to analyze the 2007 (N = 160) and 2009 (N = 136) LSM editions. Hence, we analyze in-depth developments in this two-year period. 2007 represents the start of an administrative term while 2009 represents the end of it. First, we analyze whether differences exist between topical policy groups performance and discuss differences between them (sub section 4.3.1). Second, we investigate distinctive measures taken by frontrunners (sub section 4.3.2). Third, we investigate whether pioneer status correlates with one or more of the theoretical propositions adduced in our analytical model (sub section 4.3.3).

4.3.1. Differences in performance between local sustainability items

In the LSM different sub-areas within sustainable development are differentiated (the sub-areas have many sub-items of their own). We wanted to find out whether variation in performance exists between those sub-areas. First, we analyzed the relative scores per thematic item (item social and global, item sustainable entrepreneurship, item climate and water, and total scores). It turns out that there are positive differences (growth) in all areas between 2007 and 2009. This also holds for the total score. This is perhaps not very surprising, as it might be expected between the start of a period of office and its end. What is more relevant is the variation in progress that was found between the different themes. For example, there appeared to be more progress on the ‘climate and water’ item than in the ‘sustainable entrepreneurship’ item. Figure 4 shows the differences in statistical means in these areas, as measured between the observations in 2007 and 2009.

Figure 4. Chart showing differences in means of four indicators between 2007 and 2009 (2009 = dark; 2007 = light).



4.3.2. Distinctive measures taken by pioneers

Within the 2007-2009 analysis we analyzed the detailed differences between pioneers and their mainstream peers on specific indicators (i.e. the specific sub-items in the LSM). It turns out that the greatest frequency of indicators with significant differences occurred on the 'sustainable entrepreneurship' item (12 times). Seven indicators were involved in the 'social and global' item, and six in the 'climate and water' item (see for further methodological details Coenen and Hoppe, 2010). This permits the cautious conclusion to be drawn that the future challenges to the mainstream local authorities lie in the 'sustainable entrepreneurship' area. The following specific measures may be considered:

- Formulate and maintain criteria for sustainable consumption of goods and services;
- Pursue a policy to encourage cycling;
- 'Clean' official local governmental vehicles (that meet strict environmental standards);
- Sustainable products in the canteen;
- Official encouragement of car sharing;
- Official encouragement of CO₂ emission reduction from traffic;
- Participation in the 'Progress Week' (an event to promote sustainable mobility);
- Participate in the 'socially responsible business practice' platform;
- Consider sustainability first when planning industrial estates;
- Lay down measurable sustainability goals for new buildings;
- Budget for the implementation of Sustainable Construction.

4.3.3. Relevance of theoretical propositions from public management and policy networks?

Given our theoretical elaboration we tried whether propositions on public management and policy networks could be tested. Although formal testing of hypotheses proved difficult (due to difficulties with understanding time order in data; which item precedes the other item in time?) we were able to study linear statistical relationships (see for further methodological details Hoppe and Coenen, 2011).

On the public management proposition we analyzed statistical relationships between organizational capacity (indicated by municipality size) and local sustainability performance for both 2007 and 2009. For both years we found significant evidence; this indicates a positive statistical correlation. The statistical correlation in 2007 ($\chi^2 = 47.00$; d.f. = 4; $p = .000$) is nearly as strong as the correlation in 2009 ($\chi^2 = 47.95$; d.f. = 4; $p = .000$).

We also analyzed the influence of policy networks on local sustainability performance. We operationalized this as expecting more pioneers among municipalities which have relatively many network memberships. We conducted a variation analysis (χ^2 test) for both 2007 and 2009. For both years we found significant evidence to support the proposition; this indicates a statistical correlation between the number of network memberships and local sustainability performance. The statistical correlation in 2007 ($\chi^2 = 33.53$; d.f. = 4; $p = .000$) is a bit stronger than the correlation in 2009 ($\chi^2 = 16.69$; d.f. = 4; $p = .002$). Nonetheless, both are significant (even at 99 percent confidence level).

5. Conclusions

In this paper we tried to find out what pioneering means in terms of local sustainable development. Based on the theoretical paradigms of public management and policy networks we designed an analytical framework which tries to explain local policy outcomes on sustainable development issues. The framework covers all explanatory drivers that were mentioned in the empirical literature on local sustainability. In this paper local policy outcome is perceived public service performance. In order to differentiate pioneer local authorities from their mainstream (and laggard) peers we used Rogers' adoption categories (on diffusion of innovations). Next, we paid attention to the practice of how data on local sustainability performance are collected and used in order to rank local governments. Because these data have been collected in the Netherlands for already a decade we decided to go with this case study.

The next step was to investigate empirical developments in the Netherlands. First, we learned that local sustainability was only introduced in the early 1990s following attention on the political and policy agenda as a consequence to publication of the Brundtland report and Local Agenda 21. The implementation of a strict multilevel policy scheme, VOGM, led to successful diffusion of local sustainability policy measures across the nation. As a consequence Netherlands was even considered a pioneering country. After the VOGM scheme was dropped in 1998 attention fell, and sustainability wide supporting instruments were hardly implemented any more. From then on local governments depended on support schemes from national government on fragmented separate issues within sustainable development, often leading to adverse effects such as a selection towards large well-equipped local governments. From 1999 onwards local sustainability has been monitored in the Netherlands by means of the so-called Local Sustainability Meter (LSM). The instrument not only

serves as a monitoring tool but also aims to rank local governments with the aim to 'shame and blame'. For instance, an annual prize was introduced to the local government with the highest score.

We used the data from the Local Sustainability Meter to analyze what differentiates pioneers in local sustainability from peers. We first analyzed pioneers top-ten rankings. The most important findings were: out of eight editions one local government (Breda) won the majority (five times), a few others appear regularly. This may evidence local governments that succeed in committing themselves to achieving sustainability goals for long periods. Many of the top-ten pioneers are located in one region (the province of North Brabant). Furthermore, some of the largest cities disappear from the list after the initial stage. Next, we found evidence that early participants tend to perform better over a decade than 'newcomers'. Moreover, local governments who performed well in 1999 also performed well ten years later. Analysis on different (topical) items within the construct of sustainability resulted in identification of variation: performance and progress in the 'climate and water' item was better than performance on other topical themes. This is not much of a surprise as it was heavily encouraged among local governments by national government. However, pioneers differentiated themselves from their mainstream peers in another field: implementation of policy measures in the field of sustainable entrepreneurship. Pioneers also tend to have more network memberships, and to have larger organizational capacity (in terms of organizational size).

In sum, our analysis shows that pioneers differentiate from mainstream peers on: early involvement, early above average performance, long term commitment, geographical location within a particular region with favourable conditions, adoption and implementation of policy measures in the field of sustainable entrepreneurship, (many) network memberships and (large) organizational size.

Although many of these conditions are but a small surprise interviews with local government officials and civil servants indicate that they are not exclusive. What, for instance, about influence from local politics, aldermen or the so-called 'local catalyst', and contacts with local actors? And how do SD project coordinators (often badly budgetary equipped) deal with situations in which collaboration and bargaining is needed with colleagues from other more traditional and well-equipped departments (whom don't consider sustainable development a priority)? These are tangible issues which are hard to measure with a survey approach like the LSM (which probably explains their absence in the LSM questionnaires). Furthermore, comparison between our analytical framework and the LSM items shows that most items only reflect 'policy output' (adopted policy measures) and other sub items to local government intra-organizational characteristics. A worrying signal reflects a lack of items indicating 'policy outcome' (performance): less than 10 percent in the LSM.

Measurement of local sustainability policy outcomes is a fundamental complex issue which needs further elaboration. Nonetheless, a lack of items in questionnaires on local sustainability outcome prevents a clear look at goal achievement and thus effectiveness in policy evaluation studies. Furthermore, LSM data needs to be used with great caution as many civil servants have trouble perceiving questionnaire items while others may grow tired of filling in the questionnaire year after year, or have administrative or political reasons to manipulate the data they provide.

Although our analytical framework, governance development description and explorative statistical analysis with the Dutch LSM data identify some of the drivers behind the mechanism on how pioneers in local sustainability distinguish themselves, more in-depth research is necessary to elaborate this towards a more conclusive explanatory model. Whether such a model can ever be tested remains highly doubtful because large-n data collection will likely prove difficult for multiple methodological, administrative and political reasons.

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