



Utrecht University

# THE ETHICS OF SMART METERS

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# **The Ethics of Smart Meters**

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*To my mother, for always having my back!*

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## **Abstract**

This thesis argues that when a regulator<sup>1</sup> has to make a decision between the privacy of the individual and the sustainability of the environment, non-human animals and future generations, she should choose the latter but only after she achieves informed consent. The moral dilemma addressed in this thesis is therefore, "How does the regulator choose between the privacy of the individual European citizen and the sustainability of the environment, non-human animals and future generations?". And consequently, where does the regulator draw the line between individual privacy and a sustainable energy grid that will benefit mankind (not to mention animals, plants, etc.) and assist in slowing down global warming? In this paper, I am going to address this ethical dilemma and come to a concluding suggestion in an effort to assist regulatory and legislative authorities. In order to do so, I shall elaborate the issue from the perspective of both aspects, namely preserving privacy or preserving sustainability.

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<sup>1</sup> The legislator makes policy or law while the regulator enforces policy or law. The regulator makes sure the policy or law is followed, and obeyed.

## Introduction

A meter is a hardware device that calculates the amount of electricity and / or gas consumed by a household in a specific period of time. A smart meter does the same, but it uses the latest technology to give both the consumer and the supplier (the utility, e.g. Eneco) accurate and regular updates on how much energy the consumer is using. And it does so on its own. No human interaction is needed, no one needs to “read” it and report back to the utility. It is a fundamental application of the smart grid<sup>2</sup> and the smart grid is fundamental for the integration of renewables. Renewables on the other hand, are fundamental in the European Union’s efforts (Green Deal, decarbonisation) as well as the Paris Agreement to lower the fossil energy generation / consumption and thus contribute to the fight against global warming. On the positive side, a smart grid can detect peak periods in the usage of the consumer and provide the utility with a tool to control consumption, to manage it and to give incentives to consumers to use less energy or to use energy during non-peak times. On the negative side, it can be a spy ware tool that takes ownership over the consumer’s personal data and uses that data for ambiguous reasons. An example would be that the utility could potentially use the data for fragmented marketing (sending advertisements) or even to issue penalties to consumers that “over consume” or do so at peak times, straining the grid.

It is however imperative that we understand, that without the use of devices such as smart meters, our efforts against climate change and global warming will be less than adequate. Still, Europeans – as well as their counterparts in other continents since the problem is global – are reluctant, to say the least, to integrate such devices into their homes. Consumers around Europe are concerned that smart meters and other smart devices will violate their privacy<sup>3</sup> on a regular basis and therefore, they demand control over their own data. The example of the Dutch consumer association and the legal battle it won against the Dutch utilities and the Dutch parliament in regards to the smart metering deployment, is but very recent. Indeed, the Dutch consumer association managed to halt the already scheduled and mandatory deployment of smart meters in the country, in 2009. The Dutch government was obligated to halt plans for a mandatory deployment of smart meters after the majority of the parliament was convinced that this would violate the Dutch consumer’s right to privacy and that it would be a breach of human rights. Utilities and other companies in the energy sector worry that their plans for decarbonisation and digitisation of the energy grid are being prohibited and demand on their

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<sup>2</sup> I am going to explain what a smart grid is in chapter 1

<sup>3</sup> I am going to explain privacy as used in this thesis in chapter 2

turn for more favourable laws in regards to the deployment of smart meters.

The question then arises, when the regulator has to make a choice between the privacy of the individual European citizen and the sustainability of the environment, non-human animals and future generations, what does she have to choose? Where does the regulator draw the line between human privacy and a sustainable energy grid that will benefit mankind (not to mention animals, plants, etc.) and assist in slowing down global warming? In this paper, I am going to address this ethical dilemma and come to a conclusive suggestion in an effort to assist regulatory and legislator authorities. In order to do so, I shall elaborate the issue from the perspective of both sides. That which is in favour of preserving privacy, and that which is in favour of sustainability.

I am going to define privacy as a value and give four moral reasons why we should respect personal data and privacy. I am going to show case the smart metering deployment and explain how disruptive technologies like smart meters can obstruct and invade our privacy, in its intrinsic value as autonomy and the instrumental one of wellbeing. I am also going to demonstrate, however, how the smart meter deployment can benefit society (present and future one), non-human animals and the environment in many ways, since a smart meter has various functions, from identifying peak times and trying to regulate them, to help integrate renewable energy sources. Under this prism, the issue of privacy versus sustainability becomes a headache for the legislator and the regulator alike.

In the first chapter of the paper I am going to explain how the electricity grid works, and how we transit from an analogue power grid, that is an interconnected network that delivers electricity from producers to consumers, to a smart one. That would be, according to the European commission, an energy network that can automatically monitor energy flows and adjust to changes in energy supply and demand accordingly. And finally I am going to explain what a smart meter is - in short, a microcomputer with remote access - and how such a smart machine can disrupt and invade an agent's privacy.

Afterwards, in chapter two, I shall make the case for privacy, by defining privacy as something indispensable for an agent, with both instrumental (for the well-being of the agent) and intrinsic value (for the autonomy of the agent). A value, that can be understood as an agent's "entitlement to non-disclosure" or the idea that "an individual should be entitled to claim sovereignty over himself" (von Silva-Tarouca Larsen, 2011, pp. 4-5). I am also going to use Jeroen van den Hoven's (2008) four moral reasons for protecting our personal data, to demonstrate how smart meters can invade an agent's privacy.

In chapter three, I shall make the case for sustainability. I am going to demonstrate that an ethical use of smart meters, so, basically the ethical use of new and disruptive technologies, can actually contribute towards a future with less fossil fuels integrated in our power grid. I shall demonstrate, how this smart technology can become ammunition for the European Union's Green Deal proposal and how it can help integrate renewable energy sources instead. Something that I see as an obligation not only to ourselves, but to future generations, animals and the environment. I am also going to compare the value of privacy and that of sustainability, in an effort to demonstrate that when it comes to the future of the planet and all lives on it, then perhaps we can surrender parts of our privacy. I shall argue therefore, that when it comes to sustainability and the well-being of the whole (people, environment, animals), then privacy can be of a mild secondary importance. That does not mean of course that privacy is to be disregarded completely and I shall make this clear too.

The solution that I shall propose in the fourth chapter, and my contribution to the debate, involves on the one hand, the ethical roll-out of smart meters and the treatment of the consumer (from the utilities, the legislators and the solution providers) as a stakeholder in the energy sector and not just a consumer of a product. That means, that the consumer would have a saying in the decision making process and in the handling of her data. And that she will also reap at least some of the benefits. On the other hand, I am going to borrow from bioethics the notion of informed consent and apply it in the dilemma I am dealing with in this paper.

In the last chapter, I am going to briefly elaborate on what I have accomplished in this paper and how, and I am going to draw my conclusions and offer suggestions for the regulators both in the European commission and local authorities.

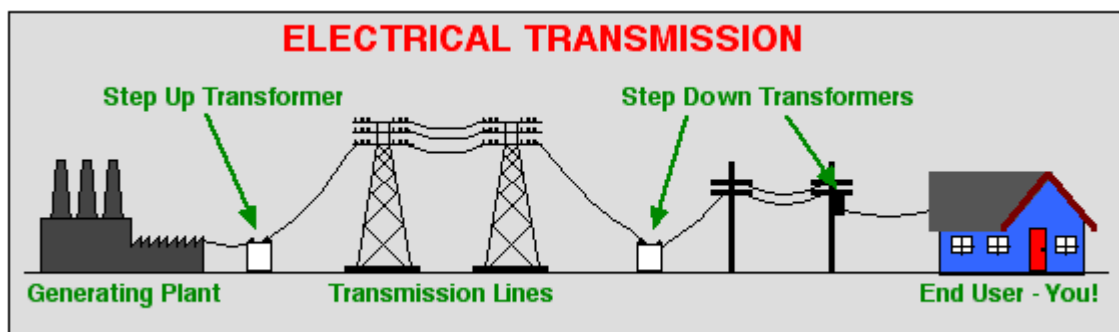


## Chapter One: The Smart Meter

### 1.1 From Power Grid to Smart Grid to Smart Meter

In order to explain the importance of smart meters, as well as the ethical ramifications that they create, one must first elaborate on the origins of the electrical system. And to achieve that, one must first explain what a power grid is, then what a smart grid is, in order to finally proceed to explaining the use, importance and ethical issues created by smart meters. The narration starts with the *electrical* or *power grid*, which is an interconnected network that delivers electricity from producers to consumers. As seen in the table (table 1.1) below, it basically starts in the places where electricity is being made and up until recently, that would be a central power station which would normally create electricity from fossil fuels (coal or natural gas) or nuclear energy. After electricity is generated, it will be transformed to very high voltage and transmitted by TSOs (Transmission System Operators like TenneT in the Netherlands) across the country. Then it would be transformed to low and medium voltage and distributed by DSOs (Distribution System Operators like Eneco in the Netherlands) across the country to individual consumers, businesses and large energy consumers (the likes of IKEA for example).

**Table 1.1.** Here we can see the generating plant (producer), the high voltage transformer, the TSO (transmission lines), the small and medium voltage transformer, the DSO (distribution lines) and the end consumer.



Picture Credits: [https://ed.fnal.gov/nep/f98/projects/nrel\\_energy\\_2/energyproduction.html](https://ed.fnal.gov/nep/f98/projects/nrel_energy_2/energyproduction.html)

Since 2009 however, and with the introduction of its 2020 climate and energy packages (European parliament, 2009b), the European Union is leading its country members towards a greener energy sector, in order to achieve energy efficiency and independence, as well as a much needed reduction of the greenhouse gas emissions.

As we can read at the European commission webpage, "As part of the European Green Deal, the commission proposed in September 2020 to raise the 2030 greenhouse gas emission reduction target, including emissions and removals, to at least 55% compared to 1990. It looked at the actions

required across all sectors, including increased energy efficiency and renewable energy..."<sup>4</sup>.

In order to achieve this 55% reduction and move towards a climate-neutral economy in the EU, the European countries will have to implement in their power grids at least a 32% share of renewable energy<sup>5</sup>. The only way to implement renewable energy to the power grid, is by transforming the already existing ones into smart grids. That is, because the integration of renewable energy resources - together with the overall digitizing of the whole sector, which is not the subject of this thesis - have the potential to disrupt the up until now normal flow of the power grid and generate issues that only a smart grid can solve.

"This is because renewable energy sources have certain characteristics that differentiate them from traditional sources: they are less controllable, they cause unintended power flow patterns, and they impact voltage and current waveforms and the overall power quality of electricity. More specifically, renewable energy sources, like all devices connected to the grid by means of power converters, generate harmonics, i.e. unwanted high frequency current and voltage components that can disrupt the electricity supply"<sup>6</sup>. Due to the above, the traditional grid which was built in order only to distribute and maintain the traditional sources, cannot handle the renewable power and thus, the creation of smart grids is of the essence.

According to the European commission, "a *smart grid* is an energy network that can automatically monitor energy flows and adjust to changes in energy supply and demand accordingly"<sup>7</sup>. According to the European technology platform for the electricity networks of the future, "a smart grid is an electricity network that can intelligently integrate the actions of all users connected to it - generators, consumers and those that do both - in order to efficiently deliver sustainable, economic and secure electricity supplies" (Nikos D, Hatziaargyriou et al., 2016, pp. 1-2). So, in other words, we take the linear power grid of table 1.1 and we transform it into a multifaceted "puzzle" that includes a number of different generators, distributors and consumers, as we can see in table 1.2 below.

In a smart grid, the power generators can be the traditional power stations (coal, gas, nuclear), but also renewable ones (solar, wind, water, etc.). They can be operated by factories or small communities (in the sense of cooperatives that own together a windmill for example) or even an individual producer that has a number of solar panels on her house roof and decides to sell what electricity she produces but does not use, to her

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<sup>4</sup> [European Commission \(2020\), 2030 Climate and Energy Framework, Brussels: European Commission](#). At the beginning of the webpage.

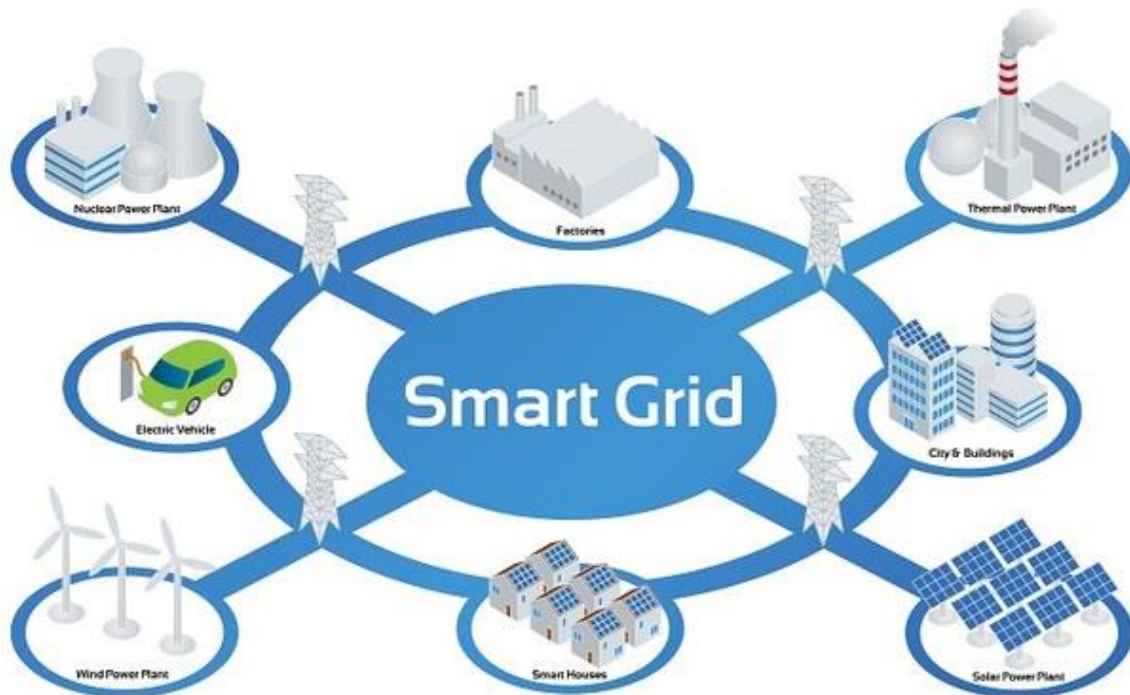
<sup>5</sup> See Footnote 4.

<sup>6</sup> [Swansea University News Release, \(2020\), Integrating renewable energy sources into the electricity grid, UK: Swansea University Press](#)

<sup>7</sup> [https://ec.europa.eu/energy/topics/markets-and-consumers/smart-grids-and-meters/overview\\_en](https://ec.europa.eu/energy/topics/markets-and-consumers/smart-grids-and-meters/overview_en)

neighbours. In addition, the distribution can be a service provided from a large company (a DSO like Eneco in the Netherlands) or a cooperative or even an individual producer.

**Table 1.2** *In this table we can see that instead of a linear production system, we have a multidimensional one, where we integrate renewable sources and where everyone can be both a producer and a consumer.*



*Picture Credit:*

<https://www.enisa.europa.eu/events/communication-network-dependencies-for-smart-grids>

In order to operate well (system modelling, control and optimization), a smart grid depends on data gathering and processing. In power systems, the most often types of data are the below:

- Data from supervisory control and data acquisition (SCADA) system, i.e. measurements of environmental parameters or power system parameters by remote equipment; These are data that do not originate by the individual consumers, but from the environment and the power system itself.
- Data from phasor measurement unit (PMU); i.e. measurements of the electrical waveform (the voltage quantity for example); and
- Data from energy consumers, i.e. measurements of energy consumption by meters (Nikos D, Hatziargyriou et al., 2016).

A smart metering system - like the one mentioned above (data from energy consumers) - is an electronic system capable of measuring electricity fed

into the grid by a consumer, a cooperative, etc., or electricity consumed from the grid by a consumer, cooperative, etc. It provides the utility (namely a DSO like Eneco or a TSO like TenneT in the Netherlands) it is connected to, with real time information, while it also facilitates monitoring and controlling of electricity flows. An example of a smart meter based on Open Smart Grid Protocol (OSGP) can be seen in the table 1.3 below, and is one of the frequently used in Europe at the moment. It has the ability to reduce load, disconnect and reconnect remotely and it can also interact with gas and water meters.

Table 1.3



Picture credit: OSGP Alliance

Smart meters are in short “microcomputers with remote access” (Nikos D, Hatziargyriou et al., 2016, p. 6) that facilitate the flow of information within a smart grid. A “smart metering system is a major source of generating energy consumption data as it is capable of automatically measuring, collecting, analysing and controlling energy usage data, either on request or on a schedule”. A typical smart metering system besides the traditional function of metering, “have the potential of supporting smart grid functionalities on the basis of their connectivity with sensors and interfacing devices to households and companies. Smart metering infrastructures are key enablers of novel smart grid services” (Nikos D, Hatziargyriou et al., 2016, p. 6).

As such, smart meters come with many benefits and advantages for the energy sector and the environment. They come however with controversies related to the ethical use of information and data that belong to someone, namely, the person that produces them. In the next part of this chapter, I am going to focus on the ethical advantages provided by the smart meters. Since smart meters are absolutely indispensable if we wish to fight climate change (since they are needed for the integration of renewable energy sources to the smart grid), their ethical ramifications are of importance to modern day societies.

## *1.2 Ethical Advantages of the Smart Meter Deployment*

As mentioned in the first part of the chapter, smart meters are capable of receiving and transmitting data, and then the utilities (DSOs and TSOs) that receive them, can use these data for information, monitoring and control purposes. Smart meters use a form of communication - like the OSGP protocol mentioned in table 1.3 - and they can provide the energy system, the consumers as well as the environment with a range of ethical benefits.

As far as the consumers are concerned, a minimum benefit would be the accurate and regular measurements of their energy consumption, which means that they are going to pay exactly the amount of electricity they use. This is going to put an end to incorrect and back billing, which, according to European commission statements, "are currently the biggest consumer concerns"<sup>8</sup>. In addition, consumers that are willing and interested in managing their energy consumption themselves, will get close to real time feedback on their energy consumption by smart meters. This way, they are going to be able to manage their energy consumption to their benefit, and thus save energy and pay less. Consumers on the other hand that wish to be more actively involved in the energy market, either alone or with the assistance of a service company (i.e. a retailer), with the help of smart meters will be allowed "to adapt their energy usage to different energy prices throughout the day, enabled to consume more during lower price periods and save money on their energy bills" (Nikos D, Hatziaargyriou et al., 2016, pp. 29-30). Smart meters provide transparency to consumers and a clear idea of what they consume and when.

But not only consumers of electricity can benefit from the services provided by smart meters. Those that generate electricity - e.g. those that have installed solar panels on their roofs - will also benefit by the use of Smart Meters, as they will be able to measure the electricity they produce in close to real time, as well as the electricity they supply to the smart grid. Thus, they can communicate the supply to the grid manager and get paid for it either in money, cryptocurrency or storage of electricity for the months that are not sunny.

It is not only the consumers, however, that benefit from the deployment and use of smart meters. Network operators such as TSOs and DSOs get a clear picture of what is going on in each part of the network they operate. And if they get a better insight of the network, then they can better plan investments and also better manage the infrastructure of the grid. Thus, they can reduce costs for the network operations and maintenance and subsequently reduce the costs for the customers and lower the energy tariffs. In short, smart metering data "increase the efficiency and the reliability of grid operations, maintenances, and extensions while the share

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<sup>8</sup> [https://ec.europa.eu/energy/topics/markets-and-consumers/smart-grids-and-meters/overview\\_en](https://ec.europa.eu/energy/topics/markets-and-consumers/smart-grids-and-meters/overview_en)

of renewable energy sources is increasing” (G.Le Ray, P. Pinson, 2020, pp. 1-2).

But it is the environment too that benefits by the use of smart meters. Firstly, because they facilitate the integration of renewable energy sources in the smart grid by providing relevant data. Secondly, because of the use of the data provided by the smart meters, utilities (i.e. system operators) can help regulate peak times, avoid congestion, detect overloads and encourage more efficient use of power sources.

“Smart meters’ deployment represents then the most substantial investment of the modernization of the grids ... while the Third Energy Package, adopted in 2009, restructures the internal European market for gas and electricity by securing a competitive and sustainable supply of energy to the economy and the society” (Nikos D, Hatziargyriou et al., 2016, p.139). It seems therefore that the deployment of smart meters represents a necessity for modern European societies, especially if European states wish to be energy independent, sustainable and limit the climate changes to the levels that world expert scientists consider acceptable, while in the meantime following the mandates of the European commission.

The ethical benefits of the smart meter deployment in general, are closely connected to the sustainability of our entire eco system, our entire planet. They represent a very important tool for the EU commission regulators as well as the various European local authorities, in the fight against climate change, because they provide the data necessary in order to integrate renewable energy sources to our power grid and thus help avoid emissions and pollution.

However, not everything is positive in regard to smart meters and their uses. Concerns have been raised, especially among citizens and citizen associations, like the BEUC (European Consumer Association). These concerns vary from considering smart meters as being a spyware tool, to believing them to be a danger to the consumer’s health. In the next part of this chapter, I am going to focus and elaborate on these concerns.

### *1.3 Ethical Disadvantages of the Smart Meter Deployment*

As explained in the passages above, a smart meter is basically a microcomputer which mostly collects and transmits data. The data collected by these microcomputers, are not impersonal general data, but personal ones, connected to the habits, preferences and everyday lives of the individuals that produce them, the consumers. There is a large number of consumers - perhaps even a majority, although no definite proof of that exists so far since no clear measurements have been made - that find this kind of technology invasive and disruptive.

The example of how the powerful consumer and homeowner associations in the Netherlands manage to halt the already scheduled and mandatory deployment of smart meters in the country, is but very recent. In 2009 the Dutch government halted plans for a mandatory deployment of smart meters after the majority of the parliament was convinced that this would violate the Dutch consumer's right to privacy and that it would be a breach of human rights. "On top of that, the consumer's association published a report from legal experts, in which the claim was made that a mandatory roll out of the meter would constitute an infringement of the right to privacy as protected in the European convention of human rights (Article 8). This violation was due to the function of the automatic remote reading of energy use by the distributor every fifteen minutes." (R Hoenkamp et al., 2011).

The objections and concerns of the consumers and consumer associations, vary. Some worry that since the smart meters generate electromagnetic waves, a malfunction could cause a fire in the house. That concern is not completely unsubstantiated, as a few years ago some poorly installed smart meters did cause fires<sup>9</sup>, but that was due to negligence and not the smart meter per se. If a smart meter is installed correctly by an expert, then it represents as much of a threat as an analogue meter.

Furthermore, the most straight forward concern regards the possibility of a smart meter being hacked. That is indeed a possibility as much as it is a possibility for a new automated model of a car to be hacked or even an airplane or our personal computers, but this is not the focus of this paper. As we progress technologically, we reap the benefits, but there are always some threats to be taken into consideration. It is the manufacturers of the smart meters and the utilities that deploy them that need to make sure and guarantee that the smart meters are going to be safe on all levels (fire and hacking for example). And it is the European commission and the local authorities of every country that need to enforce safety measures and laws.

One of the most important of consumer's worries in regards to smart meters however, and the most difficult for the energy experts to overcome, is the one connected to privacy and it manifests in various forms. People are worried that a smart meter could be a spy-ware and that "the data are then used by multinational firms to obtain more information" (R Hoenkamp et al., 2011). Or a big brother like tool, where "the data are then used by institutions (related to the state) to control consumption" (R Hoenkamp et al., 2011). Although the concepts here are slightly vague, they do represent an ethical dilemma when compared to the benefits that smart meters can bring to the individual, society and the environment. In other words, when it comes to smart metering deployment, should we make it mandatory or optional? Should the benefits for the individual, society and the

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<sup>9</sup> [Uton, D., \(2018\), Fact or fiction: debunking myths about smart meters, London: Telegraph Media Group.](#)

environments and our goals for the reduction of gas emissions take precedence over an individual's privacy?

Aristotle is giving us a head start with the distinction between the "public sphere of politics and political activity, the polis, and the private or domestic sphere of the family, the oikos, as two distinct spheres of life"<sup>10</sup>. Therefore, when it comes to choosing between the privacy of a citizen / consumer and the sustainability of the polis – and thus not only the citizens of the city as a whole but environment and animals as well – how can one, and in our particular smart metering case, the regulator, make that choice? In the chapters that follow, I am going to define privacy as something indispensable for the agent, with both instrumental (for the well-being of the agent) and intrinsic value (autonomy). And I shall do the same sustainability. I am going to start by presenting definitions and functions and pinpoint the links and differences between them.

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<sup>10</sup> [DeCew, Judith, "Privacy", The Stanford Encyclopaedia of Philosophy \(Spring 2018 Edition\).](#)



## Chapter Two: The case for Privacy

### 2.1 The Value of Privacy

Although we use the term “privacy” quite often in our everyday lives, there is no definite or single definition of it. Historically, Aristotle (Nicomachean Ethics, Politics, 2000) was among the first philosophers to make the distinction between the public sphere or the *polis* (from the Greek word for city) and the private one, or *oikos* (from the Greek word for home). The first one is associated with our public lives and our political activity and the second one with our domestic lives. It seems quite straightforward, but alas, it is not. For example, the distinction between public and private realm may appear descriptive – and it is, as it can describe the way people define and value privacy – but it can also be normative – indicating, for example, that there ought to be limits in how the personal information of the agent is being used or processed (Stanford Encyclopedia of Philosophy, 2019).

So, a first general distinction between our private sphere, or what we call privacy, and the public sphere, could be the one already mentioned in the paragraph above, that is, a distinction between what is hidden versus what is revealed. Another one could be about property, that is, what belongs to the individual and what belongs to the collective. A third one, finally, could be sectorial and divide the public and private sector in a modern market or society. To add to the confusion, the various dimensions often overlap, whereas the progress of our societies regarding the use of new and disruptive technologies – like smart metering – complicate things even further ((Stanford Encyclopedia of Philosophy, 2019).

Nowadays, discussions about privacy are mostly – but of course not only – intertwined with discussions about new technologies and more particularly information technology<sup>i11</sup>. Information technology has the potential to disrupt our thinking process, by influencing our decisions (e.g. fake news), or obtain personal information that perhaps we would rather not share with anyone (e.g. algorithms going through our browser history to find commercially valuable patterns). Thus, the concept of privacy has been of late divided between constitutional and informational privacy. The first one regards an agent’s freedom to make her own decisions about herself (abortion, euthanasia, etc.) without any interference. The second one regards the control an agent has over her own information and what she chooses to share with others (sharing personal pictures via social media, for example). The second distinction, that is informational privacy, is the one that I am going to mostly focus on in this paper, because it is the one threatened the most by new technologies such as smart metering.

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<sup>i11</sup> the study or use of systems (especially computers and telecommunications) for storing, retrieving, and sending information, Oxford English Dictionary.

Informational privacy then, can be understood as an agent's "entitlement to non-disclosure" (Beatrice von Silva-Tarouca Larsen, 2011, pp. 6-7) or the idea that "an individual should be entitled to claim sovereignty over himself" (Beatrice von Silva-Tarouca Larsen, 2011, pp. 7-8). And it is under this prism that I wish to address the issue of privacy when it comes to new technologies in general, and the smart meter in particular. Privacy seen as a value and not as a right. And what I mean when I consider privacy as a value, is both in its intrinsic and its instrumental form. What I mean, is that I consider privacy as instrumental for the well-being of an agent, that is, her living a life worth living according to her ideas and beliefs. And also as intrinsic, that is as necessary for the agent's autonomy<sup>12</sup>. The reason is, because sometimes in our enthusiasm to protect our rights, we tend to forget the values that nurtured certain concepts and helped construct the foundations of our rights. In addition, there are numerous publications on an agent's 'right to privacy' in regards to new technologies, but few if any – to my knowledge at least – that address privacy as a value.

Furthermore, I would like to distinguish privacy seen as a value from some rights that seem very similar to it, like the right to ownership for example. And although both writers I am referring to (Thomson and Marmor) are discussing rights, they also contribute to the distinction between value and right. Judith Thomson (*The right to privacy*, 1975, p. 305) writes that "there is no such thing as violating a man's right to privacy by simply knowing something about him" and that is so because "none of us has a right over any fact to the effect that that fact shall not be known by others". It is therefore not what people know about the agent, the information per se, but the way in which they obtained it that matters according to Thomson. Andrei Marmor (*What is the Right to Privacy*, 2005, p.3) agrees with her and he actually goes as far as to write that "it is about the how, not the what, that is known about you". It is thus clear to me that both authors are in agreement of two things. The first, that a violation of a right to ownership doesn't identify with a violation of an agent's privacy, which I consider a value. The second thing the two writers agree on, is that they both consider that violating an agent's private space, is not identical to violating her privacy per se. This needs a further clarification, and I think it is of value to discuss privacy further, so that is precisely what I plan to do in the passages that follow.

Let us say, for example, that someone hacks to an agent's personal computer – or her smart meter if we wish to stay in subject – and gets information about her without her permission. And let us also say, that the violation – according to both Thomson (1975) and Marmor (2005) as was explained in the passage above – regards the hacking of the computer

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<sup>12</sup> In the sense that an autonomous agent is a self-governed agent with the ability to grow and progress at will.

mainly and not the information itself. Then the hacker, by hacking the personal computer, has violated the agent's right to ownership, but not necessarily her privacy. But at which point, would the hacker violate the agent's privacy? Luckily, Marmor (2015) answers that question for us with the use of his metaphor of the global Panopticon, a world made of glass where absolutely nothing can be hidden. He writes, that in such a world, it would be the agent's control over ways to present herself to others, as well as the ability to present different aspects of ourselves, and what is ours, to different people, that would be violated. And that, according to Marmor (2015) would compromise an essential aspect of an agent's well-being. It is then, the instrumental aspect of privacy as a value that is being violated according to this example.

One of the reasons why it is important for an agent to maintain control over what she reveals about herself to others, is because people in general are not willing to subject themselves to social scrutiny (Marmor, 2015), unless they have accomplished something important which will bring appraisal to them by other members of the society they live in. Mostly however, they avoid it, either because they think they failed, or because they simply need space to experiment, work out issues, or "perhaps just to indulge in something without inviting potential criticism". Let us then suppose, that the information the hacker obtained in the above mentioned metaphor is compromising (it contains nude photographs for example) for the agent. Then the hacker violates the agent's privacy, especially if the hacker chooses to publish those photographs, because in doing so, the hacker deprives the agent of the control over how to present herself in the world. And by doing so, in my opinion the hacker violates the agent's privacy not only in its instrumental form (well-being), but also in its intrinsic form, that of autonomy, because the agent can no longer self-govern herself. Someone else made a choice for her.

In his attempt to make public and to elaborate upon the privacy issues emerging in regards to CCTV technologies, Andrew von Hirsch (Ethical and Social Perspectives on Situational Crime Prevention, 2000, pp. 61-63) more or less sustains the same position as Marmor (2005, p. 12). He says that a tolerable existence is one, "in which not all one's activities, even of a quite routine nature, are everyone else's business". This form of self-ownership is consistent with the concept of privacy as explained by both Marmor (2015) and Thomson (1975, p. 305), while in addition, von Hirsch's agent is her own person, and she lives her "life according to reasons and motives that are taken as one's own and not the product of manipulative or distorting external forces" like CCTV or smart metering technologies.

In addition, and on the same subject of CCTV, Beatrice von Silva-Tarouca Larsen (Setting the Watch: Privacy and the Ethics of CCTV Surveillance,

2011) distinguishes three basic types of privacy interests, that new technologies could potentially disrupt or violate: a) sensory privacy, which is the interest to protect ourselves against direct scrutiny; b) informational privacy, that is our interest to control information about ourselves and c) decisional privacy, the interest of making decisions about ourselves without interference from others. Furthermore, she sustains that “privacy is concerned with the degree to which we can control access to ourselves, exclude others from participating in our lives and refuse to accept their attention” (von Silva – Tarouca Larsen, 2011, pp.10-12).

From all the above, we can deduct that when discussing our privacy in regards to new technologies, we can define it as a value that grants us control over the access others have to us, releases us from interference from others, and allows us to choose what to disclose of our personal information (data) or not. A value, that is absolutely necessary to an agent’s well-being and autonomy because it not only allows for a certain level of self-ownership, but it also helps create a life worth living according to the agent’s standards. And this is precisely the definition of privacy as a value that I am going to use further on in my paper.

In the next part of this chapter I am going to use Jeroen van den Hoven’s (2008) four moral reasons of why the personal data of an agent should be protected, in order to demonstrate how a smart meter can invade an agent’s privacy, and why it is morally necessary to protect that privacy in the form of personal information or personal data. The reason why I am going to use van den Hoven’s (2008) moral reasons, is because all four of them give us very good examples of how an agent’s privacy can be violated. The first and second moral reasons concern mostly an agent’s well-being, in the sense that they define a life worth living (if followed), the third and fourth, her autonomy, in the sense that they promote self-ownership.

## *2.2 Moral reasons for protecting our data from smart meters.*

According to Jeroen van den Hoven (2008) we can distinguish four basic moral reasons why the personal data of an agent should be protected. I am not going to explain or elaborate on every notion the author is using<sup>13</sup>, I am simply going to use them as they are, as one more argument on why we should protect our data. So, the first moral reason is to *prevent harm*. Indeed, an agent can be harmed in various ways if third parties get unauthorized access to her data. In the example of the smart meter, it is easy for a hacker to find patterns in the habits of a smart meter owner

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<sup>13</sup> That means that I am not going to give definitions of “harm”, “inequality”, etc. I am simply going to refer the reader to Jeroen van den Hoven’s book for that. I am taking them as they are there for the purposes of this paper.

(when she goes out shopping, when she is on vacation, etc.) and sell those patterns to potential thieves. This is but a simple example of how a smart meter can cause harm to an agent and why van den Hoven's first moral reason applies to smart meters.

The second moral reason, is *informational inequality*. Although personal data have become a valuable commodity, agents (who are also the producers of the data) are usually not in a good position – if in any at all – to negotiate better conditions for themselves, or even if they are, they cannot, most of the times, control whether their partners honor the contracts they have made. In the example of the smart meter, the utility (Eneco, Tennet, etc. in the Netherlands) that provides the agent with electricity is in the luxurious position of deciding more or less what to do with the data and rip almost all the benefits. Of course, there are rules and regulations from the European Commission and local authorities in order to protect the consumer (like GDPR<sup>14</sup>), but the fact remains, that there are numerous ways for these regulations to be by passed. This situation does not create a fair condition for the agent / consumer. This is an example of how a smart meter can promote inequality and why Van den Hoven's second moral reason applies to smart meters.

The third moral reason refers to *informational injustice and discrimination*. The personal information that will be shared under a specific context (for example, peaks on the electricity usage obtained by a smart meter), may have a different meaning when used under another context (for example, advertisements and commercial transactions) and that "can lead to discriminations and disadvantages for the individual"<sup>15</sup>. This consist one of the major fears of consumers in regards to the smart metering deployment. They are worried that the use of their personal data (when it is more likely to use more electricity than not) can be used against them, by introducing higher prices exactly at the times of high peak usage. This could indeed lead to discrimination and injustice, because, for example, those that can afford it, will continue using electricity on peak times, whereas those that cannot could potentially have to change their entire schedules in order to use electricity on less expensive times. This is an example of how Jeroen van den Hoven's third moral reason applies to smart meters.

The fourth and final moral reason making the case for the protection of personal data, has an even more direct link to privacy. It regards *encroachment on moral autonomy and human dignity* and it sustains that the lack of privacy "may expose individuals to outside forces that influence their choices and bring them to make decisions they would not have

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<sup>14</sup> GDPR or General Data Protection Regulation, access [here](#).

<sup>15</sup> Stanford Encyclopedia of Philosophy, Privacy and Information Technology, 2019.

otherwise made"<sup>16</sup>. People have the tendency to behave differently when in company of others, or when they know or believe that they are being observed. And not only that, but they are making choices and decision only because they know other people are watching them. The Stanford Encyclopedia of Philosophy (2019) calls this "a chilling effect" on people and on society, because it "affects their status as autonomous beings". And on the other hand, this kind of observation may be misleading, in the sense that those that observe, might think that they can figure out people on the basis of their data alone, which, according to Bruynseels & Van den Hoven (2015), constitutes an epistemic and moral immodesty. And this is an example of the fourth and last moral reason that applies in the smart meter case.

From the above we can deduct that it is in our benefit to protect personal data in particular and privacy in general, because they can be used against us, obstruct our ability to make our own decisions, and affect in negative ways our well-being. New technologies like the smart meters have the potential to disrupt our lives simply by exchanging information about us. And unlike the case of the internet, social media and CCTV, where the results of third parties using our data are very visible, in the case of smart appliances – like the smart meters – the results can be harder to detect. A nude photograph on the internet is a far straight forward violation than that of creating habitual patterns due to electricity usage, but they can both be potentially equally disturbing and dangerous.

However, smart meters in particular and new technologies in general have not only or mostly negative effects in our lives. When the case for a sustainable, clean and free of fossil fuels energy system is made, technologies like the smart meters are our first line of defense against climate change and in favor of sustainability. In the next chapter I am going to make the case for sustainability and how it effects our lives, those of the future generations, animals and nature and how the smart metering technology can help meet the energy goals of the Paris agreement and the European commission. I am also going to elaborate on the privacy vs sustainability case and take a mild position in favor of sustainability.

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<sup>16</sup> See Footnote 15.

## Chapter Three: The case for Sustainability

### 3.1. The value of Sustainability

Back in 1987, the World Commission on Environment and Development of the United Nations, produced a document on sustainability entitled *Our Common Future*<sup>17</sup>. The commission was chaired by the then Prime Minister of Norway, Gro Harlem Brundtland, and the document on sustainability is known even today as the *Brundtland Report*. This report, written already more than 30 years ago, provides evidence, that the resources necessary to nurture mankind were already under strain. And the question that it raised, was whether it is fair to sacrifice the options for the future wellbeing of mankind (present and future generations), in order to sustain the comfortable life enjoyed by agents in developed countries (Stanford Encyclopedia of Philosophy, Environmental Ethics, 2015). As Brian Norton (2001) sustains, “the future ought not to face, as a result of our actions today, a seriously reduced range of options and choices, as they try to adapt to the environment that they face”. Here one could also add, that “the future” Norton (2001) refers to, doesn’t have to be the future of mankind only. After all, keeping up with the non-anthropocentric<sup>18</sup> views of many currents of environmental philosophy, the notion of sustainability – and biodiversity, which is not the focus of this paper, so I shall not expand on it – can and do include animals, plants, etc.

In Andrew Light’s (2003, p.633) words, “Nature might be indirectly morally considerable because it is the source of things that humans need, such as natural resources, used to provide the foundations for building and sustaining human communities”. In the literature of environmental ethics, there are many philosophers that, like Andrew Light, believe that nature (the environment including non-human animals) has no intrinsic value. So, animal, plants etc. are means to further the ends of mankind and their value is purely instrumental. And then, there are philosophers like Paul W. Taylor (1986) that believe instead, that animals, plants, etc. do possess intrinsic value, they are therefore ends in themselves. Since however the focus of this paper is not to elaborate on whether nature has intrinsic value or not, and despite the fact that I personally, like Paul W. Taylor (1986), believe it does, I shall constrain myself in the notion of the environment and the sustainability of it, as an anthropocentric one with instrumental value. As a means to an end therefore and that end is the wellbeing of mankind. I shall do that, because it seems to exist an almost unanimous

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<sup>17</sup> [UN \(1987\), Report of the World Commission on Environment and Development: Our Common Future, Geneva: UN Documents.](#)

<sup>18</sup> That is the view that considers humans as the central or most significant entities in the world. Many traditional western ethical perspectives are anthropocentric, either because they assign intrinsic value to human beings alone, or because they assign greater amount of intrinsic value to human beings over other beings (animals, plants, etc). Stanford Encyclopedia of Philosophy, 2015)

acceptance of the fact that nature (and the sustaining of it) has instrumental value for humans, whereas the intrinsic value – as already stated – is debatable.

Under this, anthropocentric prism, I shall agree with Ken Hickson's (2014, pp. 14-15) definition of sustainability, according to which, although literally the term means the ability to keep going and to maintain, it is also "the ability to establish continuance as a means for orienting human actions and life toward the threefold relatedness of human existence to contemporaries, future generations, and nature". In short, that means that sustainability is our ability to recognise ourselves (that is human beings), as beings related to one another, but also to future generations and nature. Furthermore, when we refer to *continuance* as part of the definition of sustainability according to Hickson, we may refer to a system (e.g. and ecosystem), or a certain entity (e.g. a species) or finally, a process (e.g. evolution). And that means that sustainability as a term allows two interpretations. It can be understood as the ability of a system, entity or process to maintain itself, or the ability of humans to maintain a certain system, entity or process.

Furthermore, to Hickson's definition, sustainability is also about *orientation*. That means, that sustainability today shows an inherent normative and evaluative meaning and it is regarded as something positive, something people strive for (Hickson, 2014). As proof to that, comes the fact that sustainability is included among the fundamental guiding principles of the international community (United Nations Millennium Declaration, UN 2000, paragraph 6). In addition, Sustainability is also about *relationships*. As the aforementioned Brundtland *report* (WCED 1987) mentions, sustainable development is "the development that meets the needs of the present without compromising the ability of future generations to meet their own needs". It is therefore important to understand that sustainability does not refer only to the continuance of something, but also to certain fundamental relationships of human beings (Hickson, 2014).

In concluding this part of defining sustainability and its value, it is important to distinguish the three aspects of it, that I am going to consider fundamental for my comparison in chapter 5 between privacy and sustainability. Sustainability as far as I am concerned has, as mentioned, three aspects. One, concerns its ability to continue the existence of something over time. It is – as explained above – fundamental for the continuance of nature and the environment humans depend their existence on. Second, sustainability is something positive, that guides (or orientates) human actions. And third, it is about fundamental relationships between contemporary humans between them, but also between present and future generations of homo sapiens. So, in order to compare privacy and sustainability, which I shall do in chapter five, it is important to keep in



mind the definition of sustainability as well as that of privacy, as it was explained in chapter three.

However, before I jump to the comparison and the informal “weighing” of the two (privacy and sustainability) in order to conclude that when it comes to sustainability, privacy can become of secondary importance and why, I need to explain how a smart meter in particular and a disruptive new technology in general can assist the case of sustainability. Because, one of the major advantages of smart meters, is the fact that they can help us obtain sustainability and meet the European Union goals for less fossil fuels and a cleaner environment for us and future generations.

### *3.2 How can smart meters help us achieve sustainability*

In chapter 2, I explained how a consumer and a utility can benefit by the use of smart meters. I also mentioned that it is the environment too that benefits by the use of smart meters. In this section of chapter four, I shall explain how smart meters benefit us in regards to sustainability and the definition given in the first passage of this chapter.

Firstly, and in regards to *continuance*, because smart meters facilitate the integration of renewable energy sources in the smart grid by providing relevant data, help maintain the environment at least the way we know it. That is because renewable energy sources are of fundamental importance to the minimising and eventually halting altogether the production of electricity by the use of fossil fuels. As an example of how harmful fossil fuels are to the environment as we know it, stands the report of the US Energy Information Association (2015), according which, in 2014, approximately 78 percent of US global warming emissions were energy-related emissions of carbon dioxide. Of this, approximately 42 percent was from oil and other liquids, 32 percent from coal, and 27 percent from natural gas. Renewable energy resources, such as solar, wind and tidal, are clean energy resources that do not pollute the atmosphere as much as fossil fuels if at all, and have the potential of being cheaper also.

Secondly, the environment benefits from smart meters are in accordance to *orientation*, as mentioned above and that is because due to the use of the data provided by the smart meters, utilities (i.e. system operators) can help regulate peak times, avoid congestion, detect overloads and encourage more efficient use of power sources. This simply means, that we are going to need less amounts of electricity, because we are going to use our resources in a smarter way. Instead of overloading the system, with the help of smart meters we are going to regulate the usage and save our energy. In short, smart meters will help reduce electricity consumption, which is one of the goals set by the international community for the next decade.

And thirdly, smart meters assist the intergenerational relationship issue that defines sustainability too, because with the help of those microcomputers, we use less resources, we pollute the atmosphere less and in the end we allow for future generations to maintain a lifestyle at least similar to the current one we have, if not a better one.

In chapters three and four, I elaborated upon privacy and sustainability as values and how they benefit the wellbeing of the agent and the human society. It is obvious that in a utopic society, we would strive to achieve both our privacy and sustainability. Since however in our current societies, this is not possible, how do we choose? In the next chapter I am going to compare privacy to sustainability and conclude that sustainability (since it involves the wellbeing of the whole – humans, nonhuman animals and environment or nature alike – and of future generations instead of that of the individual alone) should take precedence over privacy. That, however, does not mean that privacy should be disregarded, but rather gifted to present and future generations for the benefit of humanity under certain circumstances and agreements that I shall elaborate on in the next chapter.

## **Chapter Four: Privacy vs Sustainability, a difficult choice for the regulator.**

### *4.1. Privacy vs Sustainability*

In the prologue of his 1989 book "The Rights of Nature: A history of Environmental Ethics", Robert Frazier Nash sustains that such a history "traces the relatively recent emergence of the belief that ethics should expand from a preoccupation with humans (and their gods) to a concern for animals, plants, rocks, and even nature, or the environment, in general". (R.F.Nash, 1989, p.6). Nash calls "relatively recent" the emergence of the above mentioned ethical belief, because although Natural Philosophy expands through millennia, and Nature has been a focus point of much of the 19<sup>th</sup> and 20<sup>th</sup> century philosophy, it is in the 1960s and mainly the 1970s that contemporary environmental ethics emerged as a discipline. And as one goes through the history of Environmental Ethics, it is basically the last forty years that the questioning and rethinking of the relationship between human beings and the natural environment reflects "an already widespread perception in the 1960s that the late twentieth century faced a human population explosion as well as a serious environmental crisis" (Stanford Encyclopaedia of Philosophy, 2019).

It is the same time more or less that vegetarianism and veganism became known as culinary alternatives for humans and that non-governmental organizations such as WWF (established in 1961) and Greenpeace (established in 1971) – to mention but a couple – emerged, to fight for the protection of non-human animals, ecosystems, and the environment in general. This demonstrates a general interest of at least the western population towards causes that were inspired by the environmental ethics as a discipline. It also demonstrates that when adequately informed, people tend to make choices that benefit the environment in general (i.e. eat less meat and fish, recycle, donate in environmental causes, etc.). Why is it then, that when it comes to new technologies, like the smart meter, they tend to disregard all benefits and focus on the potential threats? Why is it so difficult to understand that smart meters represent a sine qua non option regarding the integration of renewable energy sources in our power grid? And that renewable energy sources are a necessity if we wish to have a chance in the battle against global warming and other environmental issues? And, just to get back to the topic of this paper, it is hard to understand how and agent wouldn't agree in sacrificing a small percentage of her privacy, if that meant that she could help save the future of generations to come, non-human animals, plants, etc.

It is my belief that this is happening due to lack of information or education regarding not only the benefits, but also the safe use of new technologies in general and smart meters in particular. And it is the role of legislators

and regulators<sup>19</sup> to inform and educate the public. It doesn't really matter if they are officials of the European commission or local authorities, what matters is that they facilitate the flow of information and that they make sure that the consumers and the utilities work together in transparency. In this chapter, I am going to evaluate both privacy and sustainability and compare them and I am going to suggest informed consent as one of the solutions regarding this ethical dilemma.

As I explained in chapter three, privacy is a double faced value for the agent. On the one hand an intrinsic one, on the other, an instrumental one. privacy as an intrinsic value regards an agent's autonomy, in the sense that an autonomous agent is a self-governing agent with the ability to grow and progress at will. Privacy in that sense, helps the agent live a life worth living according to her own personal choices. The instrumental value of privacy, helps the agent live a life that she chooses without interference from others, gives her control over ways that she chooses, again, to present herself to others, allows her to choose, finally, the people to which she will reveal herself. In other words, privacy, as a value is absolutely necessary for the personal development of an agent as a human being, as well as for her well-being, or what is good for her. And it is closely connected, in both its intrinsic and its instrumental value, to the ability of an agent to *choose* how to live her life and how to develop herself, because a life deprived of choice is perhaps a life not worth living.

Sustainability as I explained it in chapter four has three aspects, all of them important for the wellbeing not only of the individual, but of the whole. That is the individual agent, other contemporary agents, future agents, but also non-human animals and the planet – or nature – as a whole. The first one concerns its ability to continue the existence of something over time. It is important for the continuance of nature and the environment, upon which humans depend. The second one refers to sustainability being something positive, something that guides human actions. And finally the third one, regards fundamental relationships between contemporary humans between them, but also between present and future generations (G. Bos and M. Duwell, 2016) of homo sapiens. In other words, sustainability affects everybody (present and future humans, animals and the environment) and it is something that concerns everybody.

Under this prism, it is safe to make the observation that privacy concerns mostly a definite number of individuals, while sustainability concerns every individual collectively, both contemporary and future persons. And it is also safe to observe that sustainability concerns in addition the environment and non-human animals that for some (Taylor, 1987) are equally

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<sup>19</sup> The legislator makes policy or law while the regulator enforces policy or law. The regulator makes sure the policy or law is followed, and obeyed.

important<sup>20</sup> to humans. From a consequentialist point of view, my job here should be done. Both Jeremy Bentham (1789) and John Stuart Mill (1861) would suggest that promoting sustainability over privacy is the morally right thing to do, since it maximises the overall good. Or “if and only if the total amount of good for all minus the total amount of bad for all is greater than this net amount for any incompatible act available to the agent on that occasion” (Stanford Encyclopedia of Philosophy, Classic Utilitarianism, 2019).

In addition, as an example of the willingness of people to go the proverbial extra mile when needed, comes an unprecedented court ruling in the Netherlands, which further assists the case in favour of sustainability. “In an unprecedented ruling, a Dutch court has recently upheld the case brought by climate change campaigners on behalf of some Dutch citizens and has ruled that the government has a legal obligation to protect its citizens from climate change and must therefore cut greenhouse gas emissions by 25 per cent by 2020. Similar actions are being undertaken by citizens of other countries” (Bos, G., et al, 2016). It almost seems as if the case in favour of sustainability is too strong to argue against. Almost.

But not quite. Because a life stripped of choices, even if we use the – admittedly important – excuse of the greater good, is hardly a life worth living. This is something most deontologists (e.g. Kant, 1785) would agree with. Therefore, what an agent *ought* to do in this particular occasion, derives by the permissions and obligations that give an agent reasons for action (or non-action). So, basically, the question remains. Should the regulator or the legislator<sup>21</sup> make the deployment of smart meters mandatory, thus ignoring or even violating the privacy of the individual, or make it optional, a choice, thus endangering potentially the sustainable future of the entire species, and the planet as a whole? The temptation to rule in favour of sustainability is indeed strong given the circumstances, but in the next passage, I am going to opt for a different solution. One that stands somewhere in the middle. I am going to sustain the idea that a combination of informed consent<sup>22</sup> on behalf of the agent and an ethical deployment of smart meters throughout Europe, by the Utilities (e.g. Eneco, TenneT, in the Netherlands), could let the scale weigh in favour of sustainability without completely deprive an agent of her choices. And by ethical deployment, what I mean is that utilities (e.g. Eneco, TenneT, in the Netherlands), should consider the public (citizens, agents) as stakeholders of the power grid and not just consumers or worse yet, clients.

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<sup>20</sup> But as I have already mentioned in Chapter 4, it is not the goal of this paper to take side for the moral status of non-human animals or between an anthropocentric and a bio centric philosophical view.

<sup>21</sup> See Footnote 1.

<sup>22</sup> This doctrine is a loan from Bioethics and I shall explain it in the passage to come.

#### 4.2. *Informed Consent and the agent as a stakeholder of the power grid*

It is true that the GDPR<sup>23</sup> sets the standards for the protection of data and the agent's privacy on one hand, and the 2020 Climate and Energy Package<sup>24</sup> gives guidelines for the deployment of smart meters on the other hand. None of them however provides clear rules or at least guidelines on how to do that in an ethical way that will respect both the privacy of the individual and the environment.

The good thing is, that the energy sector doesn't have to re-invent the wheel, other disciplines and sectors have already done the work for it. All the energy sector actually has to do is learn from the lessons of other sectors, like that of bioethics and new technologies / internet. For example, by "Following the path of the popular high tech companies, smart meters should [first try] to convince the technophiles and the technology evangelists...After that, the mass of customers would have followed voluntarily" (G.Le Ray, P. Pinson, 2020, pp. 3-4). Something like that could be of assistance regarding the privacy issue. This is directly linked to the notion of informed consent, because technophiles can explain in simple terms what is at stake (i.e. privacy and sustainability), while as far as the internet is concerned we have the example of the so called cookies and the cookie consent<sup>25</sup>.

Another thing that utilities and the regulators could attempt, is to help customers transform to stakeholders of the energy sector, by allowing them an active role in the grid (prosumers, that is those that actually generate electricity by, for example, owning solar panels at the rooftops of their homes). This way, the agents, the people that have to decide whether to accept the smart meter or not, are no longer at the end of the power grid, but a central point of it.

Furthermore, important elements towards an ethical approach of the smart meter deployment, is to allow the agent to control the access on her data and to balance the risks and benefits between the utilities and the customers. The most important lesson however, comes from bioethics, in the form of the so called *Informed Consent*<sup>26</sup> (T.L. Beauchamp & J.F.Childress, 2009). "Informed consent is shorthand for informed, voluntary, and decisionally-capacitated<sup>27</sup> consent. Consent is considered fully informed when a capacitated (or "competent") patient or research

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<sup>23</sup> [European Commission \(2016\), \*GDPR\*, Brussels: European Commission.](#)

<sup>24</sup> [European Commission \(2020\), \*2030 Climate and Energy Framework\*, Brussels: European Commission.](#)

<sup>25</sup> Cookie is a small piece of data stored on the user's computer by the web browser while browsing a website. The user has to give her consent – by law – for the cookies to be stored on her computer.

<sup>26</sup> Similar to the cookie consent.

<sup>27</sup> Decisional capacity can be defined as the ability of subjects to make their own medical decisions (SEoP, 2019).

participant to whom full disclosures have been made and who understands fully all that has been disclosed, consents voluntarily to treatment or participation on this basis” (Stanford Encyclopedia of Philosophy, 2019). And although it is obvious that there are individuals that cannot make their own decisions, for example infants or people with severe brain damage<sup>28</sup>, it is not my aim to elaborate on the subject in this paper. By giving the opportunity to the agent to provide the utility with her informed consent, as meant in bioethics, then the regulator, in my opinion, fulfills her duty towards the individual (contemporary and future one), society (contemporary and future one) and the environment (including non-human animals and nature in general).

In order to achieve all the above, legislators and regulators have to facilitate the flow of information (e.g. why smart meters are important and what can happen if consumers choose not to use them) and introduce marketing campaigns with the help of the utilities. That is a good start, but it is not the only thing that is needed. In order to convince even the most opposed voices, the authorities (regulators and legislators) can initiate a number of incentives. From tax reliefs to cheaper electricity tariffs, and from fines if fail to comply to pricier tariffs for one’s electricity needs, legislative and regulatory authorities have a lot and different types of ammunition<sup>29</sup>.

In this chapter I compared privacy to sustainability and demonstrated that although both important values for the development and the well-being of human beings, sustainability should take a moderate precedence over privacy in the eyes of the regulatory and legislative authorities. I sustain however the idea that this should happen via methods that are not autarchic but that respect the agent, like that of informed consent. In the next chapter I am going to conclude this paper and highlight the most important parts and argumentations.

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<sup>28</sup> Here again Bioethics provides some solutions or options. See T.L. Beauchamp & J.F. Childress, 2009 for details.

<sup>29</sup> Of course, that could bring up some ethical issues of its own, but it is not the scope of this paper to elaborate on the matter.

## Conclusion

I started this paper by explaining how important the deployment of smart meters is for the future of our society. Since smart meters are the tools that will allow the integration of Renewable Energy Sources into our power grids, their acceptance from the public, in other words the people that need to install smart meters in their homes, is absolutely necessary.

However, and although the importance of smart meters is undeniable, people don't seem to understand how profound that importance is. Although there is a public shift in the last decades towards an interest for the environment and the well-being of non-human animals, the primordial fear that people have against the unknown – in our case, new technologies like smart meters – seem to overcome their desire to safeguard the planet.

Some of their fears are less substantiated than others, but the one that is just and undeniable, is that people might have to sacrifice some of their privacy, in order to promote and achieve global sustainability. But of course, in democratic countries, one cannot force the hand of others, nor should she aspire to.

My main goal in this paper was to answer the moral question “when the regulator has to make a choice between the privacy of the individual European Citizen and the sustainability of the Environment, non-human Animals and future generations, what should she choose?”. If the deployment of smart meters should be mandatory, because it will help our society achieve sustainability for the present and the future of the planet or optional, because this is the only way to respect an agent's privacy. I explained what privacy as a value is and what is sustainability. I elaborated on the importance of both values. I then compared them and although in *prima facie* the scale was leaning towards the side of sustainability, I came up with the answer, that basically one cannot fully and ethically exist without the company of the other. In short, we need to aim to achieve both and the way I can see that happening, is by combining the lessons learnt by other disciplines and sectors and above all, by allowing and facilitating the agent in obtaining the possibility to deliver an *Informed Consent* for that which concerns her, as well as making her a stakeholder of her own power grid.



## Bibliography

Aristotele, (1996), *Etica Nicomachea*, Rusconi Editore, (Introduzione, pp. 5-17).

Beauchamp, T.L., (2009), *Principles of Biomedical Ethics*, Oxford University Press. (pp. 22-50).

Bentham, J., (1789 / 2017), *An Introduction to the Principles of Morals and Legislation*, Dover Philosophical Classics.

Bos, G., et al, (2016), *Human Rights and Sustainability*, Routledge Studies in Sustainability, (chapter 8).

Brennan, Andrew and Yeuk-Sze Lo, "Environmental Ethics", The Stanford Encyclopaedia of Philosophy (Winter 2020 Edition).

DeCew, Judith, "Privacy", The Stanford Encyclopaedia of Philosophy (Spring 2018 Edition).

Frey, R.G., et al, (2003), *A Companion to Applied Ethics*, Blackwell Publishing.

[European Commission \(2016\), \*GDPR\*, Brussels: European Commission.](#)

[European Commission \(2019\), \*Smart Grids and Meters\*, Brussels: European Commission.](#)

[European Commission \(2020\), \*2030 Climate and Energy Framework\*, Brussels: European Commission.](#)

Hatziargyriou, N. D, et al., (2016), *Smarter Energy: From Smart Metering to the Smart Grid*, Institution of Engineering & Technology. (pp. 1-3, 6, 29-30, 139).

Hickson, K., (2014), *Race for Sustainability: Energy, Economy, Environment and Ethics*, World Scientific. (pp. 3-15).

[Hoenkamp, R. et al, \(2011\), \*The Neglected Consumer: The Case of the Smart Meter Rollout in the Netherlands\*, Renewable Energy Law and Policy Review Volume 2011, Issue Number 4. \(pp. 269-282\).](#)

Kant, I., (1785 / 2019), *Groundwork for the Metaphysics of Morals*, Yale University Press.

[Keeble, B.R., \(1987\), \*The Brundtland Report: 'Our Common Future, Medicine and War\*, Volume 4, Issue 1.](#)

Le Ray, G., Pinson, P., (2020), *The ethical smart grid: Enabling a fruitful and long-lasting relationship between utilities and customers*. Energy Policy V140. (pp. 1-5).

Light, A., (2003), *Moral and Political Reasoning in Environmental Practice*, MIT Press. (p. 633).

Marmor, A, (2015), *What is the Right to Privacy*, Philosophy & Public Affairs, Volume 43. (pp. 3-26)

Mill, J.S., (1861 / 1879), *Utilitarianism*, Longmans, Green, and CO. (pp. 4, 7, 11).

Nash, R. F., (1989), *The Rights of Nature: A history of Environmental Ethics*, University of Wisconsin Press. (pp. 3-13).

Roessler, B., et al, (2015), *Social Dimensions of Privacy: Interdisciplinary Perspectives*, Cambridge University Press. (pp. 141-158).

[Swansea University News Release, \(2020\), Integrating renewable energy sources into the electricity grid, UK: Swansea University Press](#)

Taylor, P. W., (1986), *Respect for Nature: A Theory of Environmental Ethics*, Princeton University Press. (pp. 99-168).

Thomson, J.J., (1975), *The Right to Privacy*, Philosophy & Public Affairs, Volume 4. (p. 305).

[UN \(1987\), Report of the World Commission on Environment and Development: Our Common Future, Geneva: UN Documents.](#)

[Uton, D., \(2018\), Fact or fiction: debunking myths about smart meters, London: Telegraph Media Group.](#)

Van den Hoven, J. (2008), *Information Technologies and Moral Values*, Cambridge University Press. (pp. 300-319).

Van den Hoven, Jeroen, Martijn Blaauw, Wolter Pieters, and Martijn Warnier, "Privacy and Information Technology", *The Stanford Encyclopaedia of Philosophy* (Summer 2020 Edition).

Von Hirsch, A, et al, (2000), *Ethical and Social Perspectives on Situational Crime Prevention*, Hart Publishing. (pp. 61-63).

Von Silva-Tarouca Larsen, B, (2011), *Setting the Watch: Privacy and the Ethics of CCTV Surveillance*, Oxford: Hart Publishing, London. (pp. 4-8, 10-13).