



# Political ecologies of a waste incinerator in Turin, Italy: Capital circulation and the production of urban natures



Silvia Crivello

Inter-University Department of Regional and Urban Studies and Planning, Polytechnic of Turin, Viale Mattioli 39, 10125 Torino, Italy

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## ABSTRACT

The article focuses on the urban political ecology of the Gerbido waste incinerator in Turin, Italy. The analysis focuses on the relations between spaces of profitability, economic flows, capital fix and the production of urban natures. The case study allows a discussion on the hybrid nature of the processes of capital circulation and production of urban natures, emphasising how waste incineration plants generate social and environmental injustices regarding the production, simultaneously of social subjects and urban spaces benefitting from environmental policies, as well as marginal spaces and marginal subjects whose everyday living space has been modified without listening to their voices.

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## 1. Introduction

The aim of this article is to analyse how capital may produce urban natures. The argument is developed through the analysis of the so-called ‘Gerbido’ waste incinerator located in Turin, Italy. The theoretical framework of urban political ecology is mobilised in order to develop this analysis (Heynen, Kaika, & Swyngedouw, 2006; Swyngedouw & Heynen, 2003).

The political ecologies of cities essentially concern the relations between capital, urban spaces and nature. This is not new: urban political ecology has been mobilised, for example, as a theoretical framework for the analysis of the hybridisation between the two categories of the urban and the rural (Wolch, Pincetl, & Pulido, 2002) and the relationship between ecological modernisation and sustainability (Gibbs, 2002).

This study focuses on the relationship between capital and the production of urban natures, in relation to an incineration plant known as ‘Gerbido’, named after the area, in the metropolitan area of Turin, where it is located.

Incinerators are basically used for the management and disposal of waste, by a process of high-temperature combustion that gives off, as a final outcome, heat, gasses, ashes and dusts. Many scientific debates oppose those scholars arguing that the incineration process is dangerous for human health, and those arguing that recent hi-tech plants do not cause any risks. But, independently

from the development of these scientific debates, it is a matter of fact that the perception and the suspicion of potential risks makes the location of waste incineration plants a highly conflictual matter, as local communities often fight against the construction of these plants, generating NIMBY (Not In My Back Yard), NIMN (Not In My Neighborhood) and NIABY (Not In Anyone’s Backyard) phenomena (Murray, 2009; Tipaldo, 2011). This article analyses the relationship between the area of economic profitability connected to the incineration plant, and the production of urban natures, intended as networks of metabolic relations connecting the plant with other local and supra-local spaces. In this sense, unlike the analysis of the Gerbido incinerator currently available in literature (Bobbio, 2002; Tipaldo, 2011), this article will only focus indirectly on the nature of social conflicts.

From a methodological point of view, the article was developed between November 2014 and January 2015, through the analysis of texts (previous works in literature, research reports, websites, videos and blogs), in-depth semi-structured interviews with twelve relevant actors, and the participatory observation of several local events connected to a local protest movement named *Comitato No Inceneritore*.

The article is organised as follows. The next section briefly introduces the theoretical framework and some features characterising waste incinerators. The third section introduces the city of Turin, and then it develops the core of the analysis through three sub-sections. Section 3.1 focuses on the spaces of economic profitability triggered by the incinerator; Section 3.2 concerns the embedding of capital in the urban space; Section 3.3 discusses

E-mail address: [silvia.crivello@gmail.com](mailto:silvia.crivello@gmail.com)

the relationships between city, nature and the incinerator. Finally, Section 4 summarises the main points emerging from the analysis.

## 2. Political ecology in urban studies and waste incinerators: a short review

Political ecology has originally been used, as a theoretical framework, in order to study soil degradation in rural spaces (Blaikie, 1985), but more recently it has been used for the analysis of urban environmental problems (Broto & Bulkeley, 2013; Evans, 2007; Heynen et al., 2006; Keil, 2003, 2005; Monstadt, 2009). Specifically, urban political ecology has been used in order to explore the relationships between city and nature (Gandy, 2004; Heynen et al., 2006; Swyngedouw, 2006); the management of water and air (Gandy, 2004; Kaika, 2006; Swyngedouw, 2004; Véron, 2006); green areas (Heynen et al., 2006; Kitchen, 2013); land reforms (Myers, 2008); urban risks (Pelling, 2003); urban redevelopments and transformations (Bunce & Desfor, 2007; Hagerman, 2007) and environmental justice (see the classic contribution of Bullard, 1990; see also Pellow, 2006).

Urban political ecology is grounded in Marxist theoretical perspectives, focusing on the logics of circulation and reproduction of capital (Gandy, 2005; Heynen et al., 2006; Swyngedouw & Heynen, 2003) with the addition of suggestions from actor-network theory, and specifically insisting on the idea of a hybrid and inseparable nexus between nature and culture (Latour, 1999). These two concepts, in fact, are considered socially constructed conventions, and the city itself is a hybrid entity, a cyborg (Loftus, 2012; Swyngedouw, 2006), an assemblage of socio-spatial processes that intertwine and overlap the local and the global, the human and the physical, the cultural and organic planes (Heynen et al., 2006; Kaika & Swyngedouw, 2000; Pincetl, 2012). In fact, the supposed juxtaposition of the two categories of city and nature is misleading. Rather, it is necessary to propose the urban environment as a complex socio-ecological process, hybridising the organic and the cultural: Kaika and Swyngedouw (2000, pp. 123–124) define the city as both a space of 'urbanization of nature' and 'naturalization of the urban' (cf. Loftus, 2012). Specifically, on the basis of the theoretical contributions of Harvey (1996), it is possible to link the production of urban natures with processes of capital fix, intended as the incorporation of capital in the urban space as a means for generating, investing and reproducing economic surplus. However, the conceptualisation and investigation of the relationship between nature and capital depends on the epistemological assumptions mobilised by the researcher. Two main approaches have to be mentioned.

Firstly, it is possible to assume 'nature' as a reality ontologically independent from the social and the cognitive spheres. This is in line with realist approaches (Mäki, Marchionni, Oinas, & Sayer, 2004; Yeung, 1997), which do not deny the socially-constructed nature of human institutions, but at the same time they assume that reality exists independently from human consciousness.

In a different way, it is possible to embrace a constructivist approach by emphasising how nature and humans are imbricated and mutually reproduced through a number of material and symbolic metabolic exchanges. In this sense, it is possible to use the plural 'natures': the blurring of the boundaries between the human and the artificial, the technological and the natural, the nonhuman and the cyborg-human, and this suggests that there are many possible 'natures' (Loftus, 2012; Swyngedouw & Heynen, 2003).

The relation between the two approaches is controversial: according to the scholars promoting constructivist approaches, the interpretation of natural elements as 'external' to human societies may degenerate, ultimately promoting capitalist and conservative logics (Swyngedouw, 2006), while on the other hand constructivist approaches may fall into absolute relativism and

lack of coordinates for orienting empirical investigations for distinguishing truth from falsity, and for fostering social action.<sup>1</sup>

As mentioned, urban political ecology is closer to constructionist perspectives since it emphasises how capitalist hegemonic discourses propose an understanding of natural resources as commodities (Kaika & Swyngedouw, 2000). In this way, the private sector is allowed to make profits through the exploitation of public goods and processes of 'accumulation by dispossession' (Harvey, 1996). For example, scholars have shown how many cases of privatisation of urban water management have determined a rise in local tariffs which, ultimately, produced social stratification in terms of access to water (Heynen et al., 2006; Swyngedouw, 2004). Particular attention should therefore be given to the socio-ecological processes – based themselves on socio-metabolic relationships – through which specific social and environmental conditions are produced, conditions that can be positive for some social subjects and for some places, but not for others (Walker, 2009; Schlosberg, 2013). Debates on urban political ecologies therefore strongly resonate with discourses on environmental justice (see Bickerstaff, Bulkeley, & Painter, 2009; Reed & George, 2011).

In this scenario, capitalist logic plays a leading role (Harvey, 1996). The pursuit of profit, in fact, often implies the identification of vulnerable subjects and marginal spaces for downloading negative externalities (Heynen et al., 2006). This generates problems of socio-spatial and environmental justice strictly connected to the distributional aspects of environmental harms (Reed & George, 2011): minorities or groups with a low endowment of economic, cultural and social resources bear the negative externalities of an entire city, as in the case of the proximity to unpopular structures such as incinerators (Desfor & Keil, 2004; Loftus, 2012; Swyngedouw & Heynen, 2003).

Waste incinerators are relevant elements in the so-called "geographies of waste governance" (Davies, 2005, p. 375). The European Union has stressed the importance of multilevel governance in shaping policies that are sufficiently accepted (Davoudi, 2006). Still, waste management is conflictual, due to social feelings and ideas of fear, risk, injustice and resistance (Calo & Parise, 2009; Davies, 2005; Hsu, 2006). In this framework, waste incinerators have been analysed in relation to the public perception of risk (Davies, 2005; Lima, 2004; Snary, 2004); recycling practices (Murray, 2009; Wilts, 2012); sustainability (Corvellec, Zapata Campos, & Zapata, 2013; Leonard, Fagan, & Doran, 2009); social movements, community activism and NIMBY phenomena (Murray, 2009; Tipaldo, 2011).

## 3. The Gerbido incinerator

The Gerbido incinerator is located in Turin, in the northwest of Italy. The Turin metropolitan area had a population of about 1.7 million people in 2014; it is the capital of the Piedmont region (4.5 million inhabitants), and the fourth Italian city in terms of population, after Rome, Milan and Naples. With a high degree of generalisation, Turin's evolution in the last century has been quite similar to that of other major urban areas in Europe, whose growth has been connected to industrialisation and immigration. Turin grew side by side with the FIAT automobile industry, but since the 1980s, the progressive crisis in the manufacturing sector pushed local policy makers towards the quest for economic differentiation (Vanolo, 2015a). For this reason, over time Turin has tried to brand itself as a techno-city, a cultural and creative city, and recently as a green, smart city (Crivello, 2014).

<sup>1</sup> Realist and constructionist approaches do not have anyway to be imagined strictly in opposition, as they share many features, such as the rejection of positivism, reductionism and grand narratives in general (Yeung, 1997).

Despite all this, the city is currently experiencing a severe crisis. The latest available figures set the unemployment rate at 11.4%, the highest of all metropolitan cities in northern Italy. The number of people in conditions of poverty rose by 46% between 2011 and 2013. Turin also has the highest level of public debt per capita (about 3520 euro per head), equal to a total public debt of about 3 billion euros, and many critics believe this high level of debt is due to the organisational costs of the 2006 Winter Olympic Games (Vanolo, 2015b).

It is worth mentioning that, within this scenario, Turin has engaged in the project of becoming a 'smart city'. In fact, the European Union has recently introduced the theme of 'smart cities' amongst its policy priorities, with a massive allocation of funds. In brief, the smart city concept relies on the assumption that urban infrastructures and everyday life should be optimised and 'greened' through IT technologies. The vast deployment of resources from the European Union, at a time of widespread economic crisis, has had a fallout effect on the strategies of Italian cities (Vanolo, 2014). Turin is no exception, and the city wholeheartedly embraced the quest for European funds (Crivello, 2014). At the same time, the smart city project allows the involvement of private enterprises (and consequently their money) in the management of urban services (water, transport, etc.). The quest for sustainability, in this way, may not be in contradiction with actually existing strategies of urban boosterism (Raco & Flint, 2012).

As it will be argued, the Gerbido incinerator fits into this plan. It began operation in 2014 after complex and conflicting political processes, despite the strong opposition of the local population.

The analysis is presented in three overlapping subsections. The first one (subsection 3.1) analyses capital flows and the various subjects involved in the project. The following subsection (3.2) focuses on capital fix and economic externalities. The last subsection (3.3) formulates some considerations on the type of urban nature produced through the previously analysed processes.

### 3.1. The circulation of capital in the management of the incinerator

In Italy, the costs of waste incineration are supported indirectly by the state in the form of incentives for the production of electricity. In fact, the so-called 'CIP 6' mechanism (Inter-ministerial Committee for Prices, 29 April 1992) states that those producing electricity from renewable and *assimilated* resources (see later) could sell it to the Energy Services Operator (which is obliged to buy it), and this electricity is sold at a higher price than the one produced by using fossil fuels (cf. D'Alisa, Burgalassi, Healy, & Walter, 2010; Rabitti, 2008). Then, after 1999, the mechanism of the "green certificates" states that if a plant produces energy by emitting less carbon dioxide than a plant fuelled by fossil fuels, the plant gets a certificate (basically a tradable emission permit) that can be resold to other firms, which are obliged to generate a share of energy from renewable sources.

The expression 'assimilated resources' introduces many ambiguities, allowing the inclusion of those incineration plants, which actually use fossil fuels. According to recent data (ISPRA, 2012), the Italian Authority for Energy Services in 2012 supported incinerators with more than 1200 million euros, compared to 225 million euros for geothermal plants, 200 for hydro plants, 196 for wind power and 4 for solar plants. The management of a waste incineration plant in Italy evidently provides important opportunities for profit.

Interviews with subjects opposing the projects often emphasise this aspect: since the investments required for the construction and the starting up of an incineration plant are high (several hundred million euros in the case of Gerbido, as will be discussed), the

subsidies for incinerators are mostly destined for large investors in the fields of energy and public utilities.

"Italy is the only European country where waste incineration is considered equal to renewable energy, in a way that supports the production of waste (...) Germany, Austria, Belgium and Denmark require the payment a fee for each ton of waste incinerated, but Italy does the opposite" (local political actor, 3 November 2014).

"Without public incentives incinerators would barely be economically profitable" (activist, 5 December 2014).

In an interview a local resident described the incentives as "the scam of assimilated resources" (3 December 2014), and there are right now various legal proceedings between Italy and the European Union on this issue (specifically Rabitti (2008), acting as an expert for the public prosecutor, analysed the distortive economic mechanisms produced by the CIP 6 scheme).

Before 1997, which means before the introduction of the incentives, Turin and its surrounding municipalities used dumps without incineration. In 1998, the local (provincial) government – on the basis of national law (Ronchi Decree, 05/02/1997 n. 22) – issued a plan for waste management, which proposed an incineration plant, presented as a pivotal structure for the city. According to interviewees, a sort of propaganda was generated in the aftermath:

"The media bombed us with the risks connected to the accumulation of waste, with terrifying images from Naples<sup>2</sup>; it was in that context that the local administration suggested the construction of the incinerator" (resident, 3 December 2014).

Despite this positive framing, various activists and protest groups immediately opposed the project. The main association opposing the project was named 'Comitato No Inceneritore'.

"We immediately opposed the project (...) this is not NIMBY: not only did we not want the incinerator here, we did not want the incinerator anywhere" (activist, 12 November 2014).<sup>3</sup>

According to the analysis of policy documents, in 2000, in the middle of the abovementioned conflictual scenario, the Province of Turin asked a working group of scholars and specialists to manage, through a "transparent and participatory process" (Bobbio, 2002), the choice of the site in which to locate the incinerator. The group concluded the work in late 2001, delivering a non legally-binding list of potential sites. Gerbido was in tenth position.

Despite various protests, in 2005 the city gave the newly-reformed company TRM (*Trattamento Rifiuti Metropolitani*) the task of designing, building and managing the waste incineration plant. TRM ignored the locational analysis produced in 2001, and it privately funded another research, carried out by the Polytechnic of Turin, comparing only three potential sites. Gerbido, which was one of the three, had been detected as the best site. Gerbido is an area belonging to the Turin administration, but it is located on the edge of the city, in close proximity to other municipalities of the surroundings (specifically, Beinasco, Grugliasco, Rivoli, Rivalta and Orbassano). According to the Turin Masterplan the area was destined to be the location of generic 'services' and 'technological plants', and therefore no legal obstacles were put in the way within the sphere of spatial planning.

<sup>2</sup> The reference to the case of Naples is meaningful, as the city seems to symbolise and to embody the various problems, risks and conflicts connected to the management of waste. This perspective has been fully analysed by Tipaldo (2013); in the wide literature on the waste crisis in Naples see also D'Alisa et al. (2010).

<sup>3</sup> Actually, according to literature, this is not known as NIMBY, but rather as NIABY (*Not In Anyone's Back Yard* – see Schaffer Boudet, 2011; on a similar perspective see also Tipaldo, 2011).

According to many local observers, the history of TRM is somewhat controversial (see Fig. 1). In fact, TRM was originally controlled by local public capital. In late 2012, 80% of TRM had been sold for 120 million euros to the Italian multiservice company IREN and to a fund called F2i (Italian funds for infrastructures). And, in the same year, a group called AMIAT V with a major presence of IREN started acquiring the local company dealing with waste collection: AMIAT V now controls 80% AMIAT. The point is that, despite their similar names, AMIAT was controlled by public capital, while AMIAT V is controlled just by public capital.

In this complex scenario of acquisitions, many observers complain about a mingling of public and private interests, “due to the coexistence of the supervisor (in this case the municipality of Turin) and the supervised within a single entity” (activist, 28 November 2014). In fact, a local law (Regional Law n. 24, 2002) explicitly states that waste collection and waste disposal have to be managed by distinct entities. However, according to interviews, in the current scenario of the city’s economic crisis, the situation seems to be more and more complex and ambiguous.

“Turin, one of the most indebted cities in Italy, has to sell things (...) starting with TRM and AMIAT, disposal and collection (...) the problem is that disposal and collection should be two quite separate channels” (local resident, 10 December 2014).

In synthesis, according to available documents and information available on institutional websites, the entire project required a total investment of over 500 million euros: 413 million euros came from financial institutions, and 90 million euros came from TRM through a specific financial plan. Specifically, TRM mobilised money through loans from financial institutions, and the company will have to pay for the loan over a period of 15 years, from 2015 to 2029. This will be possible thanks to incoming flows of money generated by selling energy, by the taxes paid by citizens and companies for waste disposal, and by the abovementioned financial incentives connected to the CIP 6 scheme. After 2029, it is expected to generate profits that will be distributed to the private investors. In other words: the incinerator plant is expected to be fully profitable, at least in the long run. The agreement between TRM and the city of Turin will end in 2050.

### 3.2. The capital fix in the Gerbido site

The plant was built between 2010 and 2013 by a group of three companies in partnership: Constructions Industrielle de la Méditerranée (a French company, the leader of the partnership), and the two Italian companies (with headquarters in another region, i.e. Emilia Romagna) Unieco and Coopsette. The plant began to be operative in May 2014. The incinerator employs about 60 people, including technicians and administrative staff. Maintenance is assigned to external qualified teams.

The companies which built the plant proposed the slogan “Incinerator? No, from waste to energy” in order to emphasise the difference between a plant that simply burns garbage, and a plants which produces energy. In fact, according to the TRM official website, the plant can produce both electricity (up to 350,000 MW h) and thermal energy (up to 170,000 MW h). Moreover, according to these enterprises, the plant will allow savings for the city, because it will reduce the costs of waste storage in landfills.

“In a time span of 30 years, Turin will have made a saving of 10 million tons of waste in landfills (...) it is estimated that the cost for the city for every ton of waste sent to landfill is 80 euros” (TRM technical worker, 2 December 2014).

However, the mere accounting of costs and benefits is far from simple: according to critical voices, the incinerator may ultimately activate substitution effects, reducing waste recycling.

“Last year the local council has allocated 5 million euros over five years to promote recycling. It is estimated that 1 percentage point of collection is worth about a million euros [note: this means that the marginal cost of increasing by 1% the share of collection of separated waste is about one million euros], then it is expected to increase by about 5 percentage points. The incinerator costs about 500 million euros: if we had invested all that money for promoting recycling we would become better than San Francisco!” (activist, 28 November 2014).

The impact on the environment and on human health is a central issue. This paper will not enter into technical details and controversial evaluations, but it is interesting to note that capital circulates, to some extent, also in the field of technical evaluations, which have a high cost. Consequently, there is a lack of monitoring.

“The economic aspect of the monitoring is scary: TRM is the subject carrying out mandatory tests, but TRM have not the money needed, that is 800,000 euros for this year and about 2.3 million as a whole” (local politician, 10 December 2014).

Unfortunately, it has been impossible to meaningfully evaluate the negative economic externalities caused by the capital fix at the basis of the incinerator. A very rough and merely indicative argument has been developed by observing variations in real estate values. Consider the average house prices in Mirafiori Sud, which is the urban area that includes Gerbido. According to the data available,<sup>4</sup> the average price for a home (not a new construction) in 2004 (and thus before the release of the news about the construction of the incinerator) was 1753 euros per square metre, while in 2013 it was 1638 euros, meaning a decrease of about 7%. Considering the 40 areas in Turin over the same period, a decrease in average property values took place in just two cases. Although (a) there is no evidence of a direct relationship between the building of the incinerator and the decline in value; (b) the period includes the well-known real estate crisis started in 2008, and (c) the decrease in values has been quite low, there is the serious possibility that the circulation of capital has produced a depreciation of the area, as suggested by many local property owners.

“Those who bought a house in this area have surely lost money, with such a decaying real estate market and such environmental pressure” (real estate operator, 2 December 2014).

But the “dispossession” discussed by David Harvey expands outside the economic sphere. According to interviews, inhabitants and local stakeholders feel deprived of their control over space as they have the impression that the project has been developed without listening to their voices in any way, nor their requests, nor their protests – that is, in the language of urban scholars, their ‘right to the city’ (Harvey, 2008) intended basically as the citizen’s ‘right to politics’ (Purcell, 2008).

“This incinerator has been simply imposed: despite our protests, nobody took into account our needs and our wishes” (resident, 25 November 2014).

“The city had to make the deal and the public administration had to place the incinerator somewhere; they decided to put it here but they didn’t care about our needs at all...” (resident, 3 December 2014).

<sup>4</sup> OICT; <http://www.oict.polito.it> (accessed 10 December 2014).

Waste management	Waste collection
	<b>2000-2010</b>
TRM (2005) (completely public ownership: 96% City of Turin, 4% Province of Turin)	AMIAT (private company completely owned by public capital of the City of Turin)
	<b>2011</b>
	AMIAT is fully acquired by FINANZIARIA CITTÀ DI TORINO HOLDING (still a private company fully owned by the City of Turin)
	<b>2012</b>
TRM is acquired by 80% by the private companies IREN and F2I; local public ownership is reduced to 20%	FINANZIARIA CITTÀ DI TORINO HOLDING sells 49% of AMIAT to a private group named AMIAT V (technically, a corporate vehicle built purposely for the acquisition). AMIAT V is formed from three enterprises: IREN, IREN EMILIA and ACEA PINEROLESE INDUSTRIALE
	<b>2014</b>
	FINANZIARIA CITTÀ DI TORINO HOLDING sells another 31% of AMIAT to AMIAT V. Now AMIAT V possesses 80% of AMIAT

**Fig. 1.** Companies and institutions involved in waste collection and management in Turin since 2000. *Note:* the problem emphasised by local activists is that the private company IREN has become the major capitalist player in both waste management and collection, despite a Regional Law forbidding this possibility.

### 3.3. Producing urban natures

The third dimension of the analysis refers to the relationship between city and nature brought about by the construction and the management of the waste incinerator. It has to be stressed that nature is intended here as an assemblage of human and non-human beings; in other words, the aim of this section is to explore the relation between the inhabitants, the resources and the problems of the environment, enacted by the incinerator. To do this, firstly we must consider that the incinerator plant does not only burn waste coming from the Turin metropolitan area. Based on Article 35 of the 2014 National Decree known as “Unlock Italy”, ‘strategic’ facilities, such as the Gerbido incinerator, have to dispose waste coming from other parts of Italy. For this reason, the incinerator is increasing its capacity, as largely debated in local newspapers,<sup>5</sup> despite the discontent of local residents:

“It has always been said by local administrators that the capacity [*Note: 421,000 tons per year*] would not be increased, and the plant was designed in order to work efficiently and smoothly within that capacity. Now the Renzi government has decided to raise the capacity to more than 100,000 tons (...), well beyond the planned limit for safety” (activist, 12 November 2014).

“The incineration plant follows the logic of mere profit: the goose that lays the golden egg has to produce profits, and it certainly does not look at the identity cards of the junk coming in” (activist, 28 November 2014).

In this sense, it is easy to imagine that, with the expansion of the scope of the plant, there will be an increase in the circuit of capital involved in waste management. As described in various interviews, the plant activates flows of steam, waste, trucks, workers, money and energy directed to the incinerator, and also the smoke, ash, pollutants, smells reverberating in the local urban landscape.

“The waste is transferred via large trucks coming and going throughout the day, increasing pollution and increasing the perception of living in a truly marginal area, full of sheds, warehouses and ugly and dangerous plants” (resident, 25 November 2014).

“For us, life has become a nightmare: it is impossible to open the windows because of the smells (burning plastic and ammonia), and the air is filthy (...) The whole area is surrounded by greyish smoke” (resident, 25 November 2014).

Conversely, the technicians of TRM claim that the plant is not responsible for the smells, arguing that the problem was pre-existent. Even the perception of the impact of the plant on the local landscape is controversial: the builders celebrate the virtues and the architectural qualities of the artefact, arguing that it improves the landscape because it is “part of the social and cultural life of the local community”. The incineration plant, described as “a plant for living”, “is designed as a structure integrated into the territory, open to the public (...) A major issue in which TRM has invested in is the aesthetic dimension” ([www.trm.to.it](http://www.trm.to.it), consulted 8 December 2014). The plant has been designed by the company Stile Bertone, which – according to their website – proposed a structure characterised by

“modern and essential lines; it integrates technological evolution and attention to the environment (...) with its 120 meter high chimney, the incinerator has become one of the buildings

<sup>5</sup> <http://www.torinotoday.it/cronaca/aumento-inceneritore-gerbido-bocciata-mozione-cinque-stelle.html> (accessed 10 December 2014).

characterizing the skyline of Turin. A roof terrace has been built right on its top – with an external transparent lift – allowing visitors to enjoy an exciting perspective of the city and the Alps” ([www.trm.to.it](http://www.trm.to.it), consulted 8 December 2014).

In this sense, according to those promoting the project, the incineration plant itself may be intended as a sort of ‘spectacular show’ of waste recycling, and the symbol of a renewed pact between city and nature. But what kind of deal is it?

As discussed previously, there is the risk that the incinerator is perceived as a structure that alienates citizens from the practices of waste collection and recycling, commonly regarded as virtuous. The incinerator, in fact, does not seem to promote a radical rethinking of the relationship between humans and resource consumption: on the contrary, it seems to convey a very conservative environmental policy, based on the implicit idea that the side-products of our consumption processes (waste) can be symbolically ‘incinerated’, i.e. eliminated physically and symbolically from the urban space thanks to the technologies at the basis of the incinerator. In addition, the exact location of the incinerator – a structure that has an impact on the inhabitants of Gerbido and Mirafiori Sud, but that is basically ignored by the rest of the inhabitants of Turin – can potentially contribute to obliterating the problem of waste from the eyes of many inhabitants living far from the plant: loaded onto trucks, waste simply ‘disappears’ in the urban space of Gerbido. In this sense, the perception of ‘environmental injustice’ is particularly strong, as the plant generates economic benefits for some, but not for all.

#### 4. Concluding remarks

The article mobilises concepts from urban political ecology in order to investigate the relationship between the city, the circulation of capital and the production of nature. The case of Gerbido exemplifies some of the mechanisms underlying these complex relations. The construction of the incinerator has in fact been shaped in relation to a space of potential profit, allowing private actors to earn money through the management of the environmental problem which is urban waste, ultimately raising issues of environmental justice. This is arguably in line with the neoliberalist logic at the basis of many smart city projects, supporting the idea that efficiency may be enhanced through the implementation of technologies developed by private companies, and the idea that private companies may gain from the management of public services and public utilities (cf. Vanolo, 2014). In this sense, the geometry of mergers and privatisations of public companies, described in this analysis, has been driven by the desire for profits and by the logic of capital circulation in a framework of growing economic crisis and huge debt for the city of Turin.

However, as described by abundant literature in urban studies, capital can ‘fall to the ground’ with a variety of outcomes, including very negative outcomes. Clearly, the incinerator has greatly modified the cityscape. The capital fix needed in order to build the plant resulted in disadvantages for the surrounding area, triggering the concentration of wealth in the hands of an elite of investors, which is very similar to the ‘accumulation by dispossession’ described by Harvey (1996). The dispossession, in this case, refers mainly to the reduction of the inhabitants’ ‘right to the city’, intended as the possibility of having a voice on the modification of everyday urban spaces. But, despite the lack of empirical data, it is also plausible to imagine that a certain decrease in average property values may be connected and interpreted as a transfer of wealth from the hands of local property owners to those of the investors. And the transfer mechanism goes beyond the dynamics of the property market and involves spaces of supra-local capital circulation, as discussed with reference to the flows of waste coming from other cities.

Finally, the incineration plant has created new urban natures, changing landscapes, ideas, lifestyles and flows of materials, energy, labour and people. As discussed previously, the plant produces a particular relationship between citizens and waste, essentially a simplistic and conservative relationship based on the ‘power of fire’, an almost primitive and atavistic force burning and reducing the problem of waste itself to ashes. This is fully in line with the ideology of ‘solutionism’ at the basis of many smart city strategies: it is not a coincidence that the enterprises managing the incinerator support the Torino smart city project, and – as discussed – these companies are earning money through the management of urban services and urban metabolism in general.

From a theoretical point of view, this case study emphasises the usefulness of coupling political ecology frameworks with theoretical developments on environmental justice, allowing the exploration of the relationships between the hegemonic role of capital (and capitalistic elites) and the production of urban natures. The emphasis on the centrality of discursive practices and economic logics is certainly not an innovative outcome, but the mobilisation of political ecology in the analysis of urban environmental processes can help emphasise the spatial nature of the logics and contracts producing hybrid urban natures, such as the one analysed in this paper. In fact, the construction of the waste incinerator in Turin has been driven by the production of a specific space organised for the benefit of capital, and the production of this space has been characterised by power inequalities and, ultimately, environmental injustices. In this sense, the article highlights the need for developing and mobilising analytical perspectives that call into play multiple analytical tools – exploring the economic, social, cultural, political, communicational, and environmental spheres – which have been barely touched upon in this short essay.

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