

## **LOW (TECH) ISN'T SMART ?...**

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### **Abstract**

Is it possible to envision the city today without sustainable development?

In Western Europe, we put a large part of our energy in the protection of resources in order to reduce the effect of climate change, especially the extreme heat in the city centers, and to develop resilient cities in the face of natural disasters. We also work hard on social development and on generating melting pots between generations and origins. With these goals in mind, we, as landscape architects, with our large scale projects, are part of the solution. But, as nature has proven, large impacts on our environment often come from the sum of a large number of little simple changes. Nature provides 'low tech' answers, so, what can we learn from it? Fighting high level summer temperatures in our living spaces today is simple with smart *technological* solutions. But, it is just as simple and efficient with low tech *natural* solutions, like storm water management, evapotranspiration, wind use? These solutions represent no energy costs. And they are reliable, even during a large power failure, this type of design continuing to function no matter the circumstances. Scientific experimentation in Lyon, France (but also elsewhere), has already proven that a planted street (trees and bushes) is 4° Celsius cooler than a mineral street nearby.

In each project, we have to choose between the use of "pre-invented" industrial solutions, often with a high need of technical maintenance, or the use of locally adapted solutions, needing little maintenance, except observation, cleaning and gardening. In order to answer the city's needs and be as efficient as industrial products, we must dedicate more time to designing our public spaces, adapting solutions and designs to the spaces being refurbished. Using these "natural" solutions will change the face of our cities, the atmospheres, the social networks, as well as the way we organize / share work. We will need more and more 'city gardeners'. These new 'gardeners' could be local citizens, just as they could be members of the city's extended garden department. In any case, more 'gardeners' also mean more social exchange and more social appropriation of public spaces.

This thinking is illustrated in projects developed in the Lyon suburbs, where a number of projects are being renovated. The refurbishment of large settlements from the seventies (associated with social housing) in the North of Lyon, integrates as basic design requirements, green infrastructure, storm water management and biodiversity strategies, wind orientation studies, as well as a structural analysis and thermal scan of all existing buildings. This doesn't

forego the economic or the mobility analysis of the project. In another neighborhood, East of Lyon, raingardens and green spaces colonize the city center further preparing the area to climate change.

The question is not to confront a smart life for smart cities, with a ‘slow’ and simple life for sustainable human installations, but just to choose the best solution for each situation.

climate change, low tech design, storm water management, green infrastructure, city gardeners, Lyon

## 1. Introduction

The projects presented hereafter, all of which are located in the Lyon suburbs (France), stem from the will to first and foremost review the urban, as well as the social organization, planning and design of a commonly found constructive typology in France: the ‘grands ensembles’. These ‘grands ensembles’, projects developed mainly in the 60’s and 70’s, are large scale social housing projects that were spread over entire sections of unused or abandoned city areas, outside main city centers.

Today, they have become matrices for an urban and social renewal, accompanied by a strong drive for inner city landscaping, that take into account future global warming questions and rainwater management. In the last years, these ‘grands ensembles’ have met with a large increase in their population (due to higher demography, real estate speculation, etc.). But most thankfully, they also benefited from the existence of ‘vacant’ spaces, yet to be constructed.

The original urban configuration of these ‘grands ensembles’ is precisely what can be used today to adapt new urban refurbishment, reconciling natural space and density

demands, automotive and soft traffic infrastructure, social and residential housing. This reconciliation of interests and functions is mainly possible through the introduction of a mixed typology of spaces. For example, streets and avenues invariably integrate trees, rainwater gardens or ditches as well as melliferous plants, where there were none, or new urban constructions are built with the obligation to integrate central and permeable planted patches or even green roofs.

A part (more or less important, each according to individual city’s political policies) of these newly created public spaces are today submitted, in France, to public consultation and are followed either by local residential action (public space management taken over by actual residents or future newcomers), by educational team management from surrounding schools, by the use and handling of spaces for non-profit associations or even artists within the scope of a biennale or other artistic manifestation. For these reasons, these spaces must remain, despite having to be of easy upkeep, a source of collective well-being and of sharing (sharing stories, experiences, uses and functions, even production (allotments for vegetable or fruit growing), etc.).

The following examples illustrate the history of the evolution/transformation of existing ‘grands ensembles’ neighborhoods, through the implementation of major green infrastructures, mostly (but not always) managed by local authorities but always adapted to each context, each area (streets, avenues, parks, central green spaces, fruit and vegetable patches, etc.).

These major transformations are made possible by the French Agence Nationale pour la Rénovation Urbaine (ANRU), a national public aid and subsidy program to help various cities deal with the renovation of whole sectors of their inner cities.

Shared wisdom (*sensus communis*): term initially used by the Romans, meaning humanity and sensibility as well as common sense. Indeed, wisdom can be translated as the common sense of the common folk. It is the wisdom born from immediate and practical knowledge. This is a common and collective cultural heritage. Our work in Vaulx-en-Verlin and Rillieux-la-Pape, suburban residential cities, Northeast of Lyon (the Greater Lyon conurbation accounting for around 1.5 million habitants) aims to reclaim this notion of “shared wisdom”.

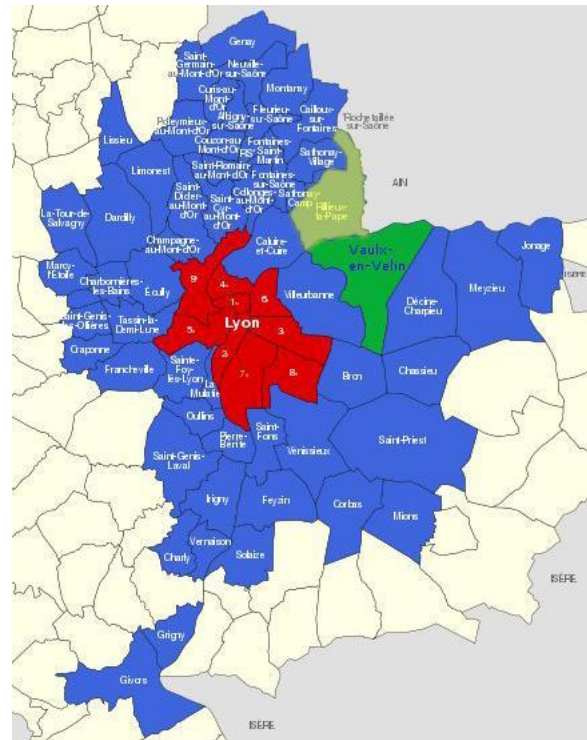


Fig 1 - The 55 municipalities of the Greater Lyon area. In green, city of Vaulx-en-Verlin. In yellow, city of Rillieux-la-Pape.

## 2. VAULX-EN-VELIN \_ THE EVOLUTION / TRANSFORMATION OF DIFFERENT CITY NEIGHBORHOODS USING SHARED PUBLIC SPACES

Since the 1960's, Vaulx-en-Verlin has been expanding from an old rural community to a residential suburb complete with working factories. Pressed by the urgency of housing shortages, the 60's urban planners applied rather typical mainstream theories to all of France's developing territories, unfortunately, regardless of context, cultural or historical preoccupations. This period saw

the introduction of “platform” urban planning, consisting mainly of social housing, surrounded by large empty “green spaces” built on old orchards, farmlands and wetlands. Today’s designers and planners are most likely to search for all remaining traces of this past, both historical and social, in order to elaborate the city's new urban landscape. The goal being to reintroduce and reinterpret different aspects of the old landscape through new public spaces but with a shared vocabulary (orchards, vegetable patches, meadows, rain gardens, etc.)

Three examples successfully demonstrate this process within the city, a city which has grown from 21 000 habitants to more than 47 000 habitants since the end of the 1960’s.

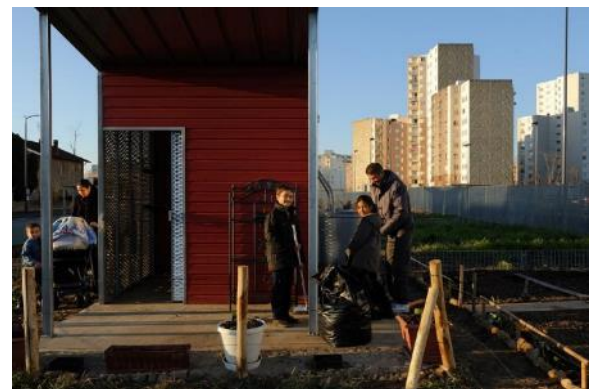


*Fig 2 – The location of 3 urban renewal projects in Vaulx-en-Velin*

## ***2.1 The Ecoin Neighborhood (2001–2009) – 10 ha. Project management: Latitude Nord landscape architects, Atelier sur les Quais architects, Cap Vert engineers.***

This neighborhood’s refurbishment included the design and construction of new streets, squares and urban parks, as well as parking lot reconstructions, the creation of communal gardens and the arrival of new shared common spaces, etc.

The project’s renewal was based, throughout, on a strong partnership between the different territorial protagonists.



*Fig 3 – The building of a garden shed in the Ecoin neighborhood communal gardens*

Two squares in the heart of this neighborhood (each of 3 000 and 1 600m<sup>2</sup>) now offer new public spaces devoted to conviviality as well as allow for the planning of community events and activities.

A new urban park now provides multiple answers to space sharing: children’s playgrounds, mini sporting grounds, specific theme gardens, multiple use large green spaces, and more intimate green spaces, etc.



The non-profit association “Vaulx Jardins” manages garden allotments that remain at the inhabitants' disposal through a 'Management Service Agreement' signed with the Vaulx-en-Velin local authorities.

The association considers these garden allotments as community meeting places and relaxation areas with the primary aim of respecting all users and the environment.

Using agro-biological gardening methods, the residents participate in the embellishment of their own living environment contributing to their neighborhood's newfound identity.

The association informs and educates local gardeners, and at times, the public, on all types of natural techniques enabling the development of many cultural and educational activities for all ages.



*Fig 4 – The Ecoin neighborhood community gardens, their sheds, their water barrels and their vegetable gardens.*

## **2.2 The City Hall Urban Development Zone (2010–2022) – 11 ha**

**Project management: Marc Pelosse architect, Eranthis landscape architect, François Gschwind lighting specialist, Sitétudes engineers.**

To answer growing concerns in the fast growing environments of our cities, France, as early as 1970, put in place new urban legislation allowing for large zones to be development with public or private funds (or both) for the betterment and the renewal of all city territory. Still largely the model in use in today's public urban planning, Vaulx-en-Velin's City Hall sector is but another example of the implementation of an Urban Development Zone.

Began in 2010, the project consists mainly of green infrastructures and rain gardens (small and large units, as well as large units with overflow outlets), using permeable materials (evergreen pavement for parking spaces, water treating rainwater gardens, etc.).

Novelty of the project: most of the underground water treatment is made through the tree substrate.

Early on, in researching the future design for this new zone, it was found that existing plants growing on the nearby riverbanks had an inherent capacity to support droughts as well as floods. These plants were capable of surviving in polluted environments by means of a rainwater filtration process. It became obvious that this knowledge would mold the

future neighborhood's landscape and the plant order within the project. The plant selection was then based on the physical properties of the substrate and the plants' root filtration capabilities.

Plant nurseries and universities were associated with one another. Piezometers (instruments needed in the fine water pressure measures) and probes were installed at the same time as the vegetation was planted. The aim of these water pressure surveys was, and are still today, to study the water cleaning results of the plant species as well as their growth.



*Fig 5 – Blooming rain garden plants*



*Fig 6 – The rainwater management of all local streets in the urban zone is exclusively alternative via rain gardens or ditches. This sector's construction ended in 2015.*

### ***2.3 The Barges neighborhood (2011–2017) – 0,5 ha. Project management: Eranthis landscape architects, Sitétudes engineers.***

Not far from the City Hall Urban Development Zone, stands another renewal project, the Barges neighborhood. This project stands among other smaller projects in the city with similar ambitions: these are 'warm out' areas that have outgrown their



initial functions and need to open up again to new urban populations and uses.

As often in occupied areas, the Barges renewal project was the object of a public inquiry and dialog sessions with the local residents early on.

Adjoining the newly designed public spaces, a center for Youth and Sport activities secured a certain amount of use for these new public spaces, located far from the more urban city center. The sports center's users and the local residents were at the heart of all concerns while designing the project.

The desire to densify our urban areas for sustainable development purposes need not only touch large agglomerations. When opening up a neighborhood such as the Barges, it must be associated to concrete development projects that reinforce the initial political will to create new functions and uses in these areas. Timid as they may be at first, these development projects, whether housing or public facilities, need to be backed. This was the case with a neighboring lot construction. An auto-building project, for residential use, was introduced in the Barges urban landscape, built by the 'Chamarel' association, a group of retired seniors searching to live in a shared coop building with shared principles. Among these principles, one finds certain common needs:

- **Cooperation:** Collective and regulated management of all aspects of the project, and later, the living spaces.

- **Ecology:** Construction and operating rules in compliance with sustainable development norms.
- **Civic rights:** Open living spaces, available to all groups, in keeping with the pursuit of a locally active lifestyle (associative, cultural, etc.)
- **Respect of individual lifestyles:** Controlled relationships between private life and collective life in respect with secularism.

As for the vegetation choices, the plants here are reminders of Vaulx-en-Velin's past involved in fruit and vegetable farming, and are at the heart of the project. A drawn shape upon the square's new concrete surfaces represents a huge thistle to remind the inhabitants of their city's past. This floral motif is reused in the street furniture.



*Fig 7 – Corten steel screens engraved with the thistle motif*



*Fig 8 – Rainwater garden*

This project aimed to implement specific plant species to allow the development of biodiversity. The introduction of bird houses also contributed to reclaiming biodiversity. The general maintenance of the project is incumbent upon the city but the nearby activity center also plays a role.

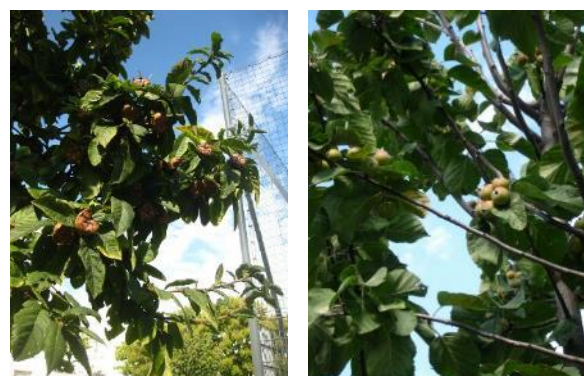
The reintroduction of a small tree-filled grove (representing the historical forest of this site), of rain gardens and swales, planted for rainwater management purposes and made up of permeable materials (evergreen pavement for parking), and plants like native tree species and blossoming hedges of mixed varieties, recall a rural image for the new square.



*Fig 9 – Mini sporting ground in the forefront, and in the foreground, the Chamarel auto-building project under construction*



*Fig 10 – Planted street with permeable surfaced parking. End of project construction: 2015*



*Fig 11 – Planted fruit tree varieties: meddler tree, apple tree*



### 3. RILLIEUX-LA-PAPE – THROUGH A NATIONAL URBAN RENEWAL PROGRAM, GREAT UNIFYING GREEN INFRASTRUCTURES

The New City of Rillieux-la-Pape, built in 1960, is today one of many registered municipalities in France's national Urban Renewal Plan, a plan which includes numerous housing rehabilitations but also demolitions and future constructions. The establishing of this sort of territorial Urban Renewal Plan allows cities to rethink the 'grands ensembles' neighborhoods and their city's own framework in general, most notably through the prism of the city's urban nature.

At the same time, Rillieux also wishes to develop an Eco District Label within this program, as well as a Cit'ergie Label (the Cit'ergie Label being the implementation of certain measures destined to municipalities that are willing to continually improve their policies concerning sustainable energy consistent with ambitious climate targets).

Two examples to illustrate the evolution/transformation of a city, having gone from 10 000 residents to more than 30 000 residents since the late 1960's:

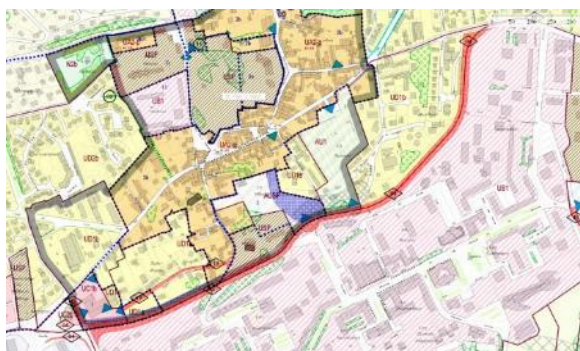
#### **3.1 The Linear Park (2016-2022) – 10,5 ha. Project management: Eranthis landscape architects, Notus architects and scenographers.**

The city of Rillieux-la-Pape is stretched over many different districts that, with time, have stopped being connected. It is especially the case with its New City district, a 'grand

ensemble' neighborhood dating back to the 60's and 70's, concentrating within its territory most of the city's population. Rillieux suffers today from these divisions among its neighborhoods, whether they be physical or social. An Urban Renewal Project such as this one, with the help of public funding from state or local government, offers new opportunities for this city to face its two major challenges: the renewal of ties between the different districts and the transformation of an old city into a new sustainable one, that will counter urban heat islands, reintroduce urban biodiversity and work to better its public spaces.



*Fig 12 – City of Rillieux-la-Pape: a green belt to surround the city's differences in altitude – a New City district constructed halfway between a natural balm and farmlands*



*Fig 13 – City of Rillieux-la-Pape: Local Urban Masterplan – In red, the former reserved area for a future roadway*



*Fig 14 – The location for the future Linear Park*

**The basis for the ‘Coulée Verte’ or Linear Park : a reserved area indicated in the city’s local urban masterplan, devoted to become a future roadway stretching from East to West.**

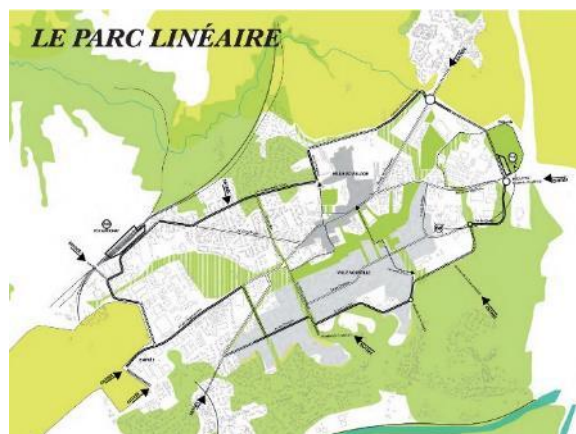
An urban study, covering the entire city of Rillieux-la-Pape in 2014 (Study team: Eranthis/Notus), and the Urban Renewal Project, under way since 2008 (and prolonged for the another 15 years), concluded with the suggestion to overlap a new green infrastructure framework atop the city’s actual urban frame, the main component, at the heart of it all, being a large

‘Coulée Verte’. This ‘Coulée Verte’ was renamed the Linear Park: a large park that would cross the city from East to West, using the image of a flowing river with areas expanding into varied spaces for different uses.

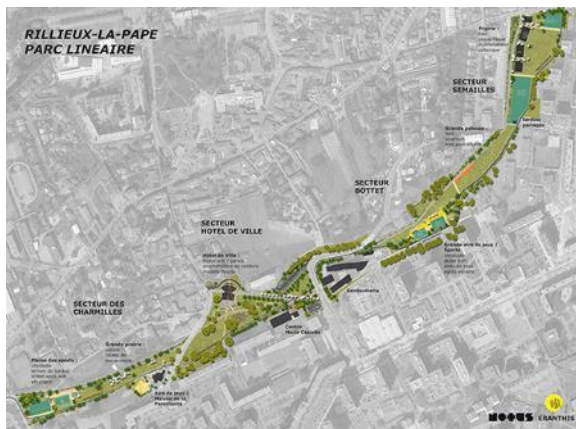
The park was thus conceived to become a grand unifying space. It offers on one hand a large scale meeting space for residents, and on the other, playing areas, sporting areas, and easy access kitchen gardens.

It is the foremost component of the new green space policy, mixing green infrastructure, natural green spaces and/or nearby proximity spaces. If these green spaces’ main mandate is to cater to leisure or recreational activities, they also serve as a biodiversity reserve or even a fruit and vegetable garden.

Non-motorized transportation options are reinforced: a bicycle path, today partially existent, is completed and redrawn across the southern stretch of the park (1,4 km), while a pedestrian walkway is entirely created across the northern stretch of the park (1,3 km).



*Fig 15 – General urban study for the City of Rillieux – plan established in 2014*



*Fig 16 – General key plan for the Linear Park*

The park's first steps in its construction in 2017 coincided that year with the Lyon Contemporary Art Biennale. As a marker for its debut and a way to involve residents beforehand, a local artist was able to take temporarily over parts of the park, his intervention consisting mainly in planting Damas rose bushes.

The idea was that at a further date he would be able to produce and collect the rose water once the rose bushes would attain a certain maturity. It is through a residents' association, in charge of pruning and caring for these bushes that his work goes on each participant already invested in the park's future.

These new 'city gardeners' are very much the different neighborhood's habitants. They meet regularly around a common activity: the caring of the rose bushes.



*Fig 17 – The planting of rose bushes, as part of the contemporary art biennale in 2017*

On the park itself, specific actions were sought in order to recover cooler air in the city, to reinforce urban biodiversity, to manage rain water and to federate citizens' gatherings, at little cost.

This concerns:

- the peeling off of existing ground top surfaces made of a bituminous mix (parking areas, streets, access roads, etc.) to replace them with grass covered zones, bush and perennial areas, trees, a bicycle path, etc.
- the planting of an additional 250 trees (to add to the 150 existing trees), a



great variety in plantation species (30 different in all), some flower varieties, some fruit varieties, to attract, as much as possible, birds and bees.

- the introduction of sporting plains, playgrounds, community barbecues, green amphitheaters and natural solariums
- the expansion of existing kitchen gardens (a total of 2 500m<sup>2</sup>) to unify collective sharing actions, to ensure the caring by the habitants of public spaces, etc.



*Fig 18 and 19 – Phase 1 of construction on the Park: a before shot (2017: a parking area with asphalt surfaces) and an after shot (2018: a prolonged tree filled park with secured bicycle path)*



*Fig 20 et 21 – Phase 2 of construction on the Park: a before shot (2017: an abandoned bike park and path) and an after shot (2019: a new sporting plain, large grassy areas with community barbecues, an exterior bowling track and a secured bicycle path)*

### **3.2 The Alagniers neighborhood (2014-2030) –40 ha.**

**Project management: Eranthis landscape architects, Notus and JASP architects and city planners.**

**Developing green and blue infrastructures, searching for civic participation.**

In 2014, the newly voted in municipal team wished to hold a holistic discussion at a communal scale particularly concerning its green framework. It was on this notion, the green framework, that their territorial project was based upon, putting forth the landscape as founding principle, a transformation instrument for spaces and practices, a levy to change the city 's New City image.

The Urban Renewal Project searches to put forward natural and recreational environments forging ahead on the existing green framework in order to develop a true network of theme related parks (urban, natural, agricultural, sporting, recreational, etc.) with one logic in mind: a structural human flow for the municipality's identity and its economic development.

#### The city's changing image and the social and urban diversity

The Alagniers neighborhood is the oldest part of the New City District. It suffers from a negative image due mainly to its poor architectural development (dilapidation, strong morphology issues, etc.), to its increasing impoverishment and to its absence of social diversity. When coming from Lyon, it is the gateway to Rillieux. In this geographical context, the renewal program is a benediction for any image changing initiative.

#### The river and its 'affluents' / the structural nature

The Alagniers neighborhood is restructured around three North/South 'green affluents' (the 'river' being the earlier cited Linear Park, chap. 3.1), and constitutes the first foundation in the implementation of new functions and uses.



Fig 22 – The new city scaled green frame...



Fig 23 – And at the Alagniers neighborhood's scale...

These affluents constitute a certain continuity between the city's natural balms and the Linear Park. They insert themselves, and actively participate, in the new green transportation plan: bus, bicycles, etc.



They allow for a better enhancement of area buildings and main public facilities in the urban landscape (newly renovated existing tower, etc.).



Fig 24 – The green ‘affluents’ that irrigate the Alagniers neighborhood

Civic participation from local residents to deploy Urban Renewal Projects, to set up urban experimentation zones.

The city’s political project team put in place an intervention methodology adapted to each type of project and to the desired degree of participation.

They applied for each sector:

- ‘walking’ general diagnosis and exploratory walks to account for daily management and environment needs
- street level public consultations in front of buildings, or door to door consulting, to gain information on uses (questionnaires concerning public recreational facilities for example)

- resident workshops (exchange times, brainstorming and debates)
- residents’ association brainstorming workshop (work done on collective memories, change adaptation, etc.)
- other urban renewal project visits and an exchange network between residents at the Greater Lyon scale
- friendly exchange moments between district associations and public housing authorities. These rather festive moments are ideal for everyone to exchange concerning the Urban Renewal Project and to materialize short term actions.



Fig 25, 26, 27, 28 – City ‘gardeners’!



#### **4. Conclusion**

Our city's new 'intelligent' urban planning and designs are today conceived in terms of the more essential criteria, more basic, simple to put in place. Among these criteria, one may find:

- The planning and designing of cities while anticipating and adapting to risks and climate change
- The preservation of water resources and the guarantee of quality and efficient management
- The preservation and enhancement of soil biodiversity and natural environments
- The promotion of heritage sites (architectural and natural), of regional history, of city and neighborhood identity
- The implementation of urban, landscaping and architectural quality projects
- The favoring of active mode transportation (bicycle, skating, etc.), community transportation and all alternative means of transports
- The implementation of common guidelines for mutual coexistence and solidarity