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de  
de **école nationale  
supérieure  
d'architecture  
de grenoble**

## **Institutional dynamics and barriers to sustainable construction in France, the United Kingdom and the Netherlands**

Magali Paris – Eric Henry 2009

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## Chapter 7

### **Institutional dynamics and institutional barriers to sustainable construction in France, Great-Britain and the Netherlands**

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#### **Abstract :**

The paper discusses institutional dynamics and institutional barriers, looking at the way policy towards sustainable construction has been developed, and at the introduction of environmental standards and guidelines to traditional methods and traditional contracts. The three countries have introduced measures to conserve energy, use more renewables, manage the use of water and reduce air pollution. In France and in Netherlands, the creation of a code in sustainability, supported by huge evolution in heating regulations, involves new competencies and a different management of projects by involving professionals, users and the local politicians differently. In France, policy has focused on specific building projects and on achieving measurable goals over a specific range of criteria and on environmental project management. In the Netherlands, a national tradition of creating consensus in planning policies has been harnessed to the control of natural resources in sustainable urban design and sustainable building design. In Britain, a broader agenda has been pursued, emphasising improvements in the quality of life. However, construction industry tendering methods and forms of contract have made this agenda harder to implement.

The dynamics are not sufficient to break down the numerous institutional barriers which contribute to professional identities, to decision making and to the organisation of everyday life. However, much individual and collective learning have been set in train.

#### **Introduction:**

All three countries and their inhabitants have been involved in the global climatic evolution that questions the future of our planet and especially the sustainability of its development. But everybody is not concerned the same way. Sustainable development is not fractal [Godard O., 1994]. Its implementation cannot be reproduced from one country to another, from time to time, because it is dependant on a political, economical, cultural and institutional context and on the past events which model the historical development of that country. In Europe, the singularity of each country lies in the heterogeneity of these paths, even if the European Union leads its members on different levels.

The preservation of resources, energy efficiency, and environmental quality are recurrent themes in which the European Union is strongly involved, with votes for directives and the implementation of international standards. The European member-states translate and re-interpret the directives and the international standards in their own regulation and standardisation.

Our desire to focus on a comparative analysis of the building sector in three countries: Netherlands, United-Kingdom and France, involves research at the heart of histories and national developments.

In each country, sustainable development actions -led at different scales (State, regions, cities etc...)- do not necessarily fit into each other but they produce new interaction systems.

Our choice to observe the 1990-2005 period is because it is significant for understanding the stakes and the evolution of the main institutional dynamics of sustainability in each country.

### ***New actors***

First of all, the sustainable development question seems to provoke, in all the countries, the increase in the power of 2 actors at the local scales of neighbourhoods and of cities: on the one hand the inhabitants and on the other hand the politicians [Gilli R., Courdurier E., 2000].

This important change may modify institutional and power games and some of the choices and decision criteria for briefing, design, use and consumption.

We may underline also that:

1. The pressures exercised by the users is outside the pre-determined schemes of the professional logistics which simply take into account the environmental requirements that are linked to a common political logic. The environmental performance of a building is evaluated by the users only if it satisfies them at the same time as their demands for space organization, use and costs.

2. The present interest (in France and the United-Kingdom) or the older interest (in the Netherlands) of politicians for sustainable urbanism and construction makes developers and builders more careful about environmental and investment choices in the long term as well as careful about the loss of profitability for their operations which can come from innovation. However, strong sustainability requirements from authorities for big city planning-construction operations (Paris, Rotterdam, Lyon, Delft or Grenoble) will make the developers and builders progress and also constitute a marketing reference for them to gain a part of a new market area. Sustainable development, as we could observe in its national evolution<sup>1</sup>, implies new ways of drawing up the objectives and the requirements for design. Sustainable development often brings conflicts between professionals, politicians and users. The arrival of new specialists in sustainable development brings changes to the habits of professionals of the building sector.

### ***The construction sector in turbulence***

The actors of the construction sector have cultural references and common techniques whatever the identity of each professional group. What gathers the actors together is a way of working structured by local projects and accompanied by a particular relationship with nature, with space modeling and materials. The construction sector is a world of transformation which taps strongly into natural resources and which produces a great deal of rubbish. The construction sector is a world which is still anchored locally and nationally but involved indirectly at the global scale with suppliers, the search for labour, the energy crises, the greenhouse effect, the waste of resources...

Professional institutions and rules in each country surround the local and national life of the construction sector, and these are by-passed by a new dynamic for more sustainable cities and construction. For builders and planners, the rules of setting-up a project, the rules of cooperation between actors and the rules of contracting are changing.

Some of the national and local initiatives reinforce this dynamic for change, whereas other initiatives put a brake on this dynamic. The former initiatives refer to formative and stimulating actions resulting from new guidelines and new actors during all the setting-up stages, during all the design stages and during all the management stages of the project. The latter initiatives are the small number of convincing actions led by public authorities, polemical and conflicting positions taken by worried professionals (often destabilized) and types of traditional contracts which lead to a standstill.

### ***Institutions and rules challenged***

What should be understood by institutions and rules?

In 2002, at the request of the Ministry of Dwelling, Planning and Environment, E. Van Bueren et H. Priemus [2002] (University of Delft) set out the position of institutions based on work by previous researchers on administration and organization in North Europe and United-States (March J.G., et Olsen J.P., 1984 and Klijn E.H., et Koppenjam J.F.M., 2000).

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<sup>1</sup> The research, we have conducted, focuses on the effects of the more and more frequent applications of the sustainable development principles to the construction of buildings in three European countries: United-Kingdom, Netherlands and France.

This position takes two aspects into account when evaluating change, on the one hand the formal and institutional rules<sup>2</sup>, and on the other hand the informal rules and the interaction models which structure and regulate but do not predetermine the behaviors of professionals and their way of selecting problems and choice criteria.

The thesis of March and Olsen, essentially interactionist, proposes that every organization is problematic and can be understood through its ways of cooperation and interaction (between actors). The ways of cooperating and interacting allow the organisation to be reproduced and to exist despite its weakness, its contradictions and its conflicts. This thesis concentrates less on power games than on the canalisation of these power games by institutional criteria for choice and by organisational procedures. The change of reference framework, consisting of guidelines for design and of new rules, which is due to a greater consciousness of sustainability, alters the legitimacy of decision criteria, common methods of cooperation and models of interaction. The evolution of regulations and acts reinforces or inhibits such a change.

### ***The beginnings of a new market***

Sustainable building, sustainable construction and design are “constructions durables” (sustainable buildings) or “constructions HQE » (High Environmental Quality buildings) in the French version. In Europe, the terminology varies from one country to another but all countries show, after about ten years, a huge but recent change in the ways of exchanging, of cooperating, of taking decisions in the briefing, the design and the realisation of construction.

Since 1992-1995, with programmes of encouragement, the creation of standards and regulations (more and more numerous), especially in France and in the Netherlands, a new market area has emerged. This is due to converging results of scientific studies on climatic change, on the reduction of biodiversity, on the effects of different types of chemical pollution etc. The increasing demand for sustainable dwelling could become permanent.

In the International and European context of the 2004-2006 period, our research focussed on France, the Netherlands and United-Kingdom. These 3 countries have different building cultures, different state and territorial organisations and very different contracting systems. Each country has a particular path (which seems more or less efficient) regarding the initial purposes for promoting sustainable development of the dwelling and the city.

We will develop a comparison, of the dynamics of change and the difficulty of achieving the initial purposes, by presenting successively;

- A short history of the national development of the regulations and standards and of the politics of change in the sustainable construction sector
- The rating systems for sustainable construction which aim to create a dynamic in institutional change and to renew methods of cooperation
- The advances and the constraints on institutionalisation and the constraints on progressively learning new ways to cooperate and to make decisions.

### **1.A short history of national developments in regulation, normalisation and political change in the context of sustainable building and sustainable urban design**

The environmental societal stakes (reduction of greenhouse gas emission, protection and recycling of resources, urban densification and social mix, demographic evolution of cities) are global. However, the national paths of the building and urban design worlds are different from one country to another. They are closely linked to public opinion, to the organization of professions (training, contracting systems, systems of practice) and to the territorial and political organisation, as well as to the national economy of the sector, to the new investment dedicated to sustainable development and to the sharing of innovation between states, cities, developers, designers and users.

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<sup>2</sup> As laws, decrees (laws of definition of the responsibilities, of the missions, of the relationships, etc...), and acts (urbanism, building, environment, markets etc...) and regulations (accountancy, tax system, techniques, energy, security)

1.1 **In France**, a research and development program was launched in 1992 by the PUCA<sup>3</sup> with researchers and professionals. After the agitation of the 1978-1980's around solar energy and the creation of an Agency for the management of energy (AFME), the research and development program of 1992 constituted the first major initiative in the construction area. The socialist ministry of housing initiated this program. The results of this program are to be seen in the 1996 methods and tools of environmental quality evaluation and in a code for high environmental quality called "HQE" which is centered on building (Olive G., 1999 ; Rialhe A., Nibel S., 1999).

In 1993, 11 experimental "green building sites" were launched with the help of the PUCA and the ADEME<sup>4</sup> and then 100 REX (Research-Experimentations) called HQE were undertaken for social housing from 1994 to 1998. These operations were not really convincing because the principles of sustainable building were applied in the wrong way.

Then, environmental quality high schools were developed in the area of Paris supported by the ARENE<sup>5</sup> and in the North area supported by the new regional council directed by an ecological elected representative and the CERDD<sup>6</sup>. The concept of "Eco-lycée" (Eco-high school) was launched and was spread to other regional councils in which there were ecological elected representatives. These projects presented many requirements which were difficult to evaluate a posteriori. The Ecological nature of materials and their toxicity were debated.

Some professionals and ecological elected representatives extolled the use of traditional material (soil, straw, hemp...). A black list of industrial materials with energy costs, and/or known to be toxic, appeared. Then, the industrial firms -gathered in the AIMCC<sup>7</sup>- joined with the High Environmental Quality association to set up a standardisation of the products through AFNOR<sup>8</sup>. Thus, the commission NF-P-01E was created in 2000, it was in charge of defining and codifying the environmental quality of building construction products. Same time, legislation was very active. From 1992 to 1996, laws were voted on water, landscape, noise, air, the protection of the environment and on sustainable development in urbanism and planning. These laws prepared the ground for local urban sustainable development initiatives. The plan of decentralisation and of local public action was completed with several laws, one attributing urban design competences to urban collectivities (1999), another a law on solidarity and urban renewal (SRU 2000) and another the law for neighbourhood democracy (2002).

Finally, a plan for the climate was published in 2000 to satisfy the Kyoto agreements. The National Plan for Sustainable Development (PNDD) was not published until 2002, ten years after the earth summit in Rio de Janeiro. This plan concludes the set of institutional reforms and gives the initiatives a stronger local dimension, as they have had in Netherlands for 25 years. The "HQE" reasoning and its code- composed of 14 targets structured in 4 areas (See Chapter by Debizet-Symes)- stimulates the world of construction but is often criticized for its lack of strong requirements, in particular regarding energy performance. Otherwise, the "HQE" reasoning requires the actors deliberate about the targets to be chosen and to involve the users in questions concerning major targets of environmental quality, comfort and health [Hetzel 2003, Bornarel, Akiki 2003].

Since 1998-2000, a dynamic of innovation has been carried forward by a group of professionals -we call them founders- who have created the "HQE" association and have registered the trademark "HQE" in 1996. The "HQE" reasoning focuses on environment and building and thus is different from the reasoning about sustainable development which takes place in France,

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<sup>3</sup> The PUCA (Plan Urbanisme Construction Architecture) is a ministerial organ dependant of the ministry of urban planning.

<sup>4</sup> The AFME became the ADEME (Agency for environment and for the energy management) in 1992. In 2006, the ADEME was composed of 820 employees among which were 350 engineers. Its budget was about 310 millions of euros and the ¾ for its actions: Research and Development and subsidies. The ADEME is a French example of the preference to concentrate expertise at the center and to disseminate it locally after. This preference hasn't got an equivalent in United Kingdom where the technical expertise is located at the level of regional agencies and local government. The Netherlands combine the both, on the one hand a central expertise and strong national plans and on the other hand local expertise and subsidies of councils and cities.

<sup>5</sup> The ARENE-IDF is the Ile-de-France Regional Agency of the Environment and New Energies

<sup>6</sup> The CERDD is the Nord-Pas-de-Calais Regional Center of resources for sustainable development

<sup>7</sup> The AIMCC is the Association of the Industries of Construction Products

<sup>8</sup> The AFNOR is the French Association of standardization

today, at the scale of urban design of the commune<sup>9</sup>. Since 2002-2003, the “HQE” reasoning has been reinforced by the certification of tertiary buildings implemented by 2 organisms: CERTIVEA (certification organ of the CSTB<sup>10</sup>) and the AFNOR and overseen by the “HQE” association. In the same period, CERQUAL (certificating organ of QUALITEL<sup>11</sup>) and the AFNOR created a certification of environmental quality of housing based on a simplified guideline composed by 7 targets and on an audit of the management of the project at each important step of the project (in the same way CERTIVEA has done for certification). The Union for single-family housing and the AFNOR have also created a certification of “HQE” for such projects (See Chapter by Debizet-Symes). All these certifications underline the requirement for strong performance, especially performance in energy efficiency. The developers and the communes follow this dynamic of certification. Thus the “HQE” association, the National Union of Property Developers (SNAL) and the ADEME have launched in 2005 an experimental program to set up a guideline for sustainable urban design composed of 11 targets, whereas the association of the ecological mayors (éco-maires) and the ADEME have launched in the same period an experimentation of sustainable development in communes. Simultaneously, the ADEME set up a reasoning for an environmental and urban approach (AEU) based on 50 experimental projects (Schmitt, Debergue, 2006). This experimentation at a territorial scale is quite new in France, whereas experimentation is a common practice in the building world. Today, urban design and building experimental programs are being developed in the same way they have been developed in the Netherlands for 10 years. Since the year 2000, a new market is emerging through legislative and normative measures and through a noticeable increase in experimental projects.

**1.2 In the Netherlands**, initiatives on energy efficiency for buildings, on the management of water, on the recycling of waste have been conducted since 1990-1992 through experimental programs at the scale of buildings and communities.

The social-democratic government has played the parts of an instigator and a regulator with several actions: since 1972 the concept of an “ecological way of life” has been set up, in 1980 the urban planning department was created, then in 1993 environmental planning for the grouped-housing composed of more than 200 dwellings was initiated. In 1989, national plans, concerning energy efficiency, renewable energy, management of natural resources and waste, and the development of welfare, were promulgated. These plans have been followed by several experimental projects and always debated with the enterprises of the building sector, the housing associations and the counties. These plans have been evaluated since 1996. The purpose of the first experimental projects was to show what could be done in terms of sustainable building. Then, rapidly (after 1997), sustainable urban design became a main strategy (spatial proximity, transport, landscape, urban facilities), and the state began to devolve its responsibilities the counties.

Since 2001, the assessment of national plans has taken an important place. This assessment is quite positive despite gaps having been revealed in the support by professionals, and in the residents not being sufficiently involved in the projects, and in the higher and higher standards of regulations being difficult to implement (Sunnika M., 2002). The State, the materials producers, and the professionals of the building area together created in 1996 the DUBOCentrum<sup>12</sup> which completes the institutional organization system of the building sector: the other components are the SBR (Scientific and Technical Center for Building), the NOVEM (Agency for Energy and Environment) and the NVOB (National Research and Development Center for the Building Contractors). The DUBOCentrum was in charge of setting up, disseminating and providing training about the new requirements for sustainability, which are gathered in the guidelines called the NP (“Nationaal Pakketten Durzame Bouwen”) and accompanied by some

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<sup>9</sup> The commune is the smallest administrative subdivision in France.

<sup>10</sup> CSTB: Scientific and Technical Center for Building

<sup>11</sup> QUALITEL is an association which purpose is to improve the quality of housing.

<sup>12</sup> DUrzaam BOuwen centrum= the center for sustainable building

recommendations for design. These guidelines are sorted by type of building and are based on the first experimental projects and on a negotiation between the professionals of the building sector.

The debates about materials are quite similar in France and in the Netherlands. Due to the emergence of a black and white list of materials, the industrial producers chose to disseminate environmental and sanitary information about materials. Then a standard on environmental and sanitary information products was created. This standard, called MRPI, is based on the EN 14021 and 14024 published in 1998. The MRPI standard is more concise than the French equivalent standard called P01-010 published in 2004. The MRPI standard allows the certification of materials by registered organisations. In parallel with this standard, a large number of decision-making tools and assessment tools have been created, and disseminated to builders and designers. The housing associations have created guidelines called DUWON quite similar to the French code “HQE” since their main purpose is to fix targets, to manage operations and to evaluate and to monitor performance and the functioning of the building<sup>13</sup> (Sunika, M., 2002). Simultaneously, DUWON intervenes at the first stage the development of a strategic territorial plan, so making the link between the strategic policy of the housing associations and the application of environmental requirements and recommendations formalized in the NP (“Nationaal Packetten”). The requirements of regulations, regarding NP, have been regularly increased to improve the energy efficiency of buildings and the use of renewable energy<sup>14</sup>.

The sustainable development of cities has always been taken into account (densification, recycling of waste, clean transport). The history of being “a small country captured from the sea” may underly principles of saving resources, of planning, of solidarity and of a consensual way to govern. The academics and the professionals predicted this noticeable evolution of planning, standardization and regulations. Since 1980, the academic institutions which train engineers and architects have taken into account the environmental and sustainable development approach, wherein professionals have developed a new way of managing projects<sup>15</sup> jointly (See also Chapter by Scheck et al.).

References	Netherlands	France	United-Kingdom
Population	16 millions	64 millions	60 millions
Density	482 inhab/km2	113 inhab/km2	239 inhab/km2
Nb of dwellings	6,75 Millions	27 Millions	25,7 Millions
Social housing stock/ Total housing stock	35%	21%	21%
Social rental housing stock/ Total rental housing stock	75%	43%	67%

Comparatives figures of population and housing (Sunnika, M., Boon, C., 2002)

The innovation process is based as much on fundamental requirements for sustainable development as on performance, on criteria for decision-making, on forms of project management and on the content of training. The Dutch world of construction seems to be involved in a virtuous circle of change. About 50 communities and about 100 of environmental quality buildings have been completed between 1990 and 1998. Since 1995, the fourth national plan for urban planning, called VINEX, was launched with high requirements for sustainability (ADEME/Energie-Cités, 2003). However, the improvement of requirements in both the new and in the existing stock of buildings is being debated, in particular in the context of a neo-liberal

<sup>13</sup> DUWON is composed by a management tool (strategic plan set up step by step) around which are decision making tools. DUWON precise indicators, it allows a discussion about requirements at different steps of the project and finally it helps to define the environmental impacts. DUWON propose targets but not recommendations. There are 3 levels of ambition from the higher regarding to long life-time of facilities to the lower regarding to short life-time and a little budget.

<sup>14</sup> In 2000, the target “EPC” (Energy Performance Coefficient) was since 1996 <1 that is to say -40% and since 1990 -60% for energy consumption in new buildings, these figures are to be compared with the -25% from 1996 to 2006 in France whereas the production of renewals was multiplied by 10 from 1995 to 2002.

<sup>15</sup> They created, in particular, the functioning of the project as a Building Team.

government, which emphasises economic topics and promotes the immediate benefits for the quality of life and a shorter return on public investment.

**1.3 In the United-Kingdom**, the neo-liberal policy of the Thatcher government (1979-1990) was distinguished, in the area of housing and cities, by the privatisation of a huge stock of public estates (now owned and managed by private organisations or residents associations)<sup>16</sup>. This market emphasis left environmental initiatives out.

However, in 1990, the BRE (equivalent of the Dutch “SBR” and of the French “CSTB”: Scientific and Technical Center for Building) developed a guideline for the environmental and sustainability assessment of buildings (BREEAM<sup>17</sup>). But in the political context of the United-Kingdom, BREEAM did not initiate a dynamic in the sector similar to that of “HQE” in France or of the “NP” in the Netherlands. After 1991, the privatisation of the BRE implied the commercialisation of BREEAM while the professionals were involved in solving other problems. At the same time, other “labels” and other methods for improving construction were published and approved by the government and the professionals. Finally, in this period, the BREEAM came in a variety of forms depending on the various types of buildings or construction<sup>18</sup>. With the arrival of the Major government in 1991 and the debates around the Rio Summit, environmental considerations became a current topic. A campaign for regeneration of cities and deprived communities was launched, and a program of structural reforms of the industry of construction was supported by the Latham report (1994) and lobbying from business. The main objective of this program was to encourage and improve productivity and the return on investment by the enterprises through the development of groups of public buildings and by the sector working at an international scale and by developing innovating engineering (Winch G., 2000). This program, supported later by the Egan report (1998), did not take into account requirements of environmental quality and sustainable development.

However, national foundations and NGOs (WWF, Greenpeace, Friends of the Earth...) have played a major role in disseminating the principles of the Rio Agenda 21, and some architects and consultants have developed private sustainable projects during this period. In the United-Kingdom, in opposition with France and the Netherlands, there is no ecology party that can influence the two leading parties: the Tory party and the Labour party. Since 2000, after the election of the Labour party, environmental quality has been linked to quality of life in public policies (Building a better quality of life). A commission for sustainable development was created in 2000, and reinforced in 2006. Recently, public organisations such as DEFRA (Ministry of agriculture, environment and fishing), and CABE (The government's advisor on architecture, urban design and public space) are in charge of studies and research on sustainable development and the built environment. Lately, the government and the Regional agencies have begun to promote, both financially and legislatively, more sustainable development. New programs, acts and regulations have been created: « Sustainable communities: building the future » (2003), « Energy act » (2004), « Energy building regulation » (2004), « Housing: building a sustainable future » (2005), « Code for sustainable housing » (2006). (See also Chapter by Debizet and Symes)

If only a few cities- with the assistance of foundations, architects and consultants- have promoted on the national and international scale environmental experiments such as the BedZED community<sup>19</sup>, these experiments have contributed to make environmental stakes become public stakes, in particular through the media. The movement for “Sustainable Urban Design” seems to have been initiated.

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<sup>16</sup> Thus 2 millions of social housing have been sold between 1990 and 2005 on the principle of “Right to buy”

<sup>17</sup> The BREEAM is the first assessment methods of environmental impacts in housing, it was developed by the BRE (British Research Establishment) on economical, social en environmental criteria, on the model of sustainable development as it was promoted by the Bruntland report in 1987.

<sup>18</sup> BREEAM Ecopoints= urban scale, BREEAM Ecohomes= housing, BREEAM for offices= offices

<sup>19</sup> The Beddington Zero Energy Development (BedZED) is the UK's largest carbon-neutral eco-community - the first of its kind in this country. BedZED was developed by the Peabody Trust in partnership with Bill Dunster Architects and BioRegional Development Group, environmental consultants.

## 2. The guidelines for sustainable construction create a dynamic for institutional change and renew methods of cooperation

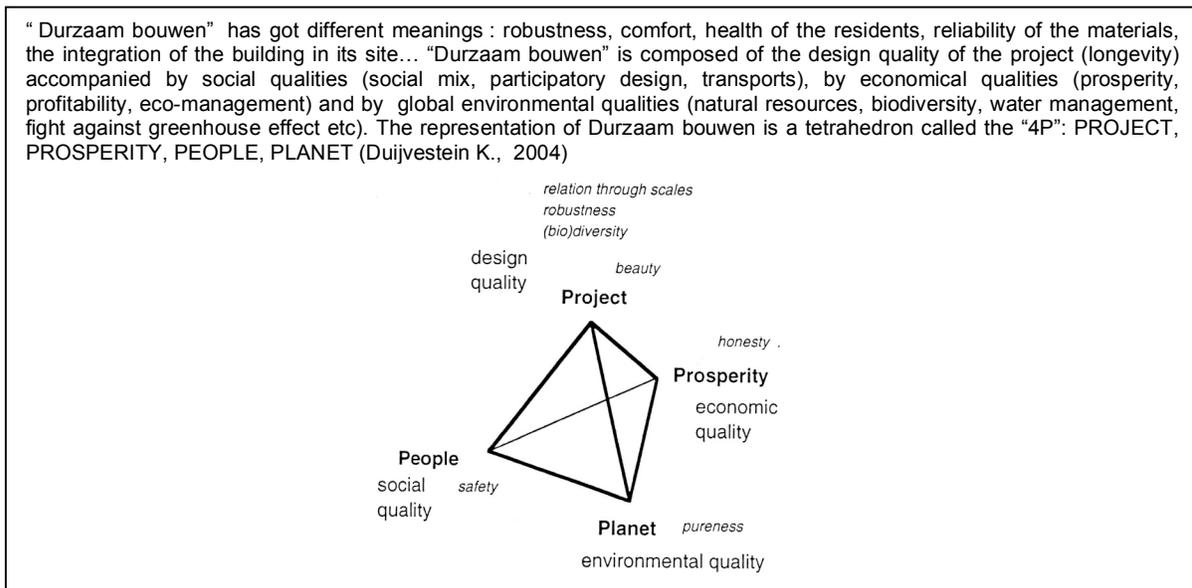
The creation and the utilisation of guidelines for sustainable development in construction structure the collective initiatives of professionals and the management of projects in respect of new requirements, new targets and new methods (Bourdin, A. 2005). This is the case of France and the Netherlands, where the guidelines “HQE” and “NP” structure the different stages of projects and the way in which professionals collaborate. These guidelines could be considered as codes that apply across the professions in the world of construction. These guidelines are levers for the organisational and institutional changes that affect professionals<sup>20</sup>. The guidelines have a huge impact in the Netherlands, but rely on the public assessment, public policies, mobilisation of professionals, standardisation and regulations, which are not altogether in line. An irreversible change of institutions has not been yet achieved.

Are we observing a change of paradigm for the design of buildings? Are we shifting from guidelines centered on the building to environmental and decentered guidelines?

In a new paradigm, the actors would focus first on environmental factors (natural, urban, economic, social) and then take into account the new requirements (concerning energy, water, air, comfort, climate, transports etc...). Whereas traditionally, the client and the designers focus first on the financial, aesthetic and functional requirements of the building. This evolution could lead to strong interactions between briefing, design, building and use, to simultaneous innovations in uses, in technologies and sometimes in legislation and policy. We suppose that a process for convergence has been engaged and that this process will be developed in the future especially in the sector of sustainable construction [Ben Mahmoud Jouini, Midler, 1996].

The situations are very different for the three different countries we have studied.

**2.1 In the Netherlands**, from 1995 to 1998, the “Nationale Packetten” (NP) have been created - by the ministry of housing, the professions of construction, the industries concerned and representatives of energy and transport sectors- as a way of defining sustainability.



In the “NP”, for each type of building, there are sustainability targets accompanied both by sustainability requirements and/or performances depending on the legislation and by

<sup>20</sup> These guidelines are applied as standards, i.e. on the voluntary action principle. They are efficient only if the professionals advance together and if the guidelines are in line with the legislation.

architectural and technical recommendations. Recommendations, for NP Buildings, are related to 5 main targets: materials, energy, water, indoor environment (comfort) and outdoor environment (nature, landscape, facilities and transport)<sup>21</sup>. The recommendations take into account the temporality of the project from pre-briefing to future utilisation, the management of the project and different spatial scales. The “Nationale Packetten” compensate for the lack of and the heterogeneity of information and knowledge about sustainable construction. The Dubocentrum disseminates to the public the “Nationale Packetten” and provides assistance to the professionals in their application on projects. The “NP” are also political and financial tools. Since 1996, in the context of the “green investment initiative”, subsidies have been given to projects which satisfy the “NP” performance based on the recommendations. In 1998, 61% of social housing planning permissions satisfied the “NP” recommendations, this number should have risen to 80% in 2000, according to the statistics<sup>22</sup>. Quite rapidly, the government, with the professionals, decided to combine the recommendations of the “NP” with an improvement of legislative performance requirements according to health, security, functionality and energy performance for the whole market for new housing.

As a conclusion, the system of “NP” has set up a dynamic that goes far beyond the production of buildings. The “NP” are the hub of knowledge, they set the paths for new competences, they interact with a more collaborative management of construction projects, fix the subsidies and implement the legislation.

From a French point of view, the Dutch have established a large panel of means for implementing a number of actions and these converge on achieving ambitious purposes.

**2.2 In France**, the establishment and use of the “HQE” code is far from contributing directly to sustainable development and to becoming as important in the market as the “NP” are in the Netherlands. The original division between environmental reasoning on buildings and sustainable development of cities is a French particularity, whereas in the Netherlands sustainable building and sustainable urban design have been linked for 10 years. However, recently, convergence between construction, facilities and urbanism has become more important and has led to some experimental projects. Otherwise, construction could be covered only in respect of environmental quality, because the actors, the financing and criteria for decision-making differ from those for facilities and urbanism.

Today, in France, the “Effnergie” guidelines, directly inspired by the Swiss guidelines called Minergie, have proved a success with professionals and could bring to the foreground the search for high-energy performance. Does the search for high-energy performance mask other objectives such as local employment, local democracy and the search for sustainability at different territorial scales? Indeed, we observed in construction projects both the increasing impact of the developers and town councillors and the deeper involvement of residents and managers. Another tendency is the development of Agenda 21 of territories or housing associations. These Agenda 21 expose several purposes of sustainable development of buildings and cities, they work towards the creation of multi-scale guidelines based on environmental targets (water, energy, air, landscape, transports, etc...) similar to the Dutch reasoning. In this context, building and construction could be managed with guidelines that are different but embedded, or they could be managed together with such guidelines as in the experiment by the SNAL<sup>23</sup>, the association “HQE” and the ADEME. The “HQE” was an important action produced by a visionary group of professionals and researchers supported by ministerial and regional politicians, when the government was not interested in sustainable urban development except in respect of transport and waste. The “HQE” was quickly disseminated within the professionals of the building sector, all the more so since the “HQE” reasoning is not

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<sup>21</sup> It exists different “packetten” for building: housing, offices, industrial buildings, educational buildings (the “packetten” are different for new building or rehabilitation) and also for planning project and for civil engineering project.

<sup>22</sup> The results were not so good because the subsidies from the government have paid the overinvestment whereas the buildings did not always reach the performances and the housing association did not think in terms of global cost. The government is now stressing the role of municipalities and residents to set up their own projects (Van Bueren, E., Priemus, H., 2002)

<sup>23</sup> SNAL= Syndicat National des Aménageurs Lotisseurs (National Union of Housing developers)

exclusively concerned with environment. Beyond environment, the “HQE” has been defined as a quality and management approach (ISO 9000 et 14000), integrating environmental and economic qualities and the quality of life (Olive G., 1999).

The “HQE” reasoning also gathers societal interests and individual interests. Thus, for the definition of targets and management, it gathers all the actors of construction sector, the users and sometimes the local collectivities. Its requiremental code opens debate on the performance to be reached and constitutes a framework for designers and clients and also for the firms to debate, negotiate, validate and share risks when innovating with technical solutions. The “HQE” reasoning incorporates the principle of post-occupancy evaluation, at least in some of the targets. The performance of a building is strongly linked to user behavior. The “HQE” reasoning brings these aspects together.

**2.3 In the United-Kingdom,** The early creation in 1990 of BREEAM guidelines for the concept of sustainable development (environment, economy and society), has produced a tool composed of multiple criteria linked to performance points which depend on chosen solutions. This reasoning was on the model of international reasoning and recommendations of the moment. Contrary to the French context, BREEAM did not emerge from inter-professional debate but was created as a standard assessment tool. The final sum (an addition weighted by criteria points) ends with a qualitative and declarative assessment of the project’s quality which can be qualified as: quite good, good or excellent. The assessment is made when the building has been completed; the assessment has no impact on the management of the project or on the relations between professionals. Moreover, in 1990 the BRE was privatised, so its resources have been scattered, which made the BRE commercialise the application of BREEAM when the construction sector was in difficulty. The Labour and the Tory parties were not engaged in sustainable development and environmental quality in the 90’s.

Since 2002-2004, the involvement of the government and the Regional agencies for development in a policy of sustainable development for housing was reinforced by the Energy Act on energy saving and renewable energies according to the Kyoto agreement. In 2004, a new heating regulation was introduced to reduce consumption (-20%). The Ecohomes code was made mandatory (see Debizet and Symes chapter) to improve energy consumption and government plans to increase its construction target from 200,000 to 240,000 new dwellings per year were announced together with Building Act for “Sustainable Homes”. It is too early to measure the consequences of this action.

As a conclusion, we observe, at least in France and in the Netherlands, the transformation of a methodology for briefing and design centered on aspects of the building into a methodology focussed on urban and global sustainability requirements. The purposes and the process of the project are changing; a change of paradigm is today observable. An organizational and institutional innovation process has commenced. Now, designers focus on diagnosis of the natural, urban and economic environment of the project, and they focus on the search for new solutions: environments which preserve or develop from new requirements concerning energy, water, air, comfort, landscape, climate, transport etc... This process of change is still at its early stages even if the Dutch approach is the most advanced of those in these three countries (see Chapter by Scheck et al).

### **3. The advance of sustainability, the constraints on its institutionalisation and the progressive learning of new ways to cooperate and to make decisions.**

The innovations engendered by the new requirements of sustainability produce unrest within the professions and question the public and professional institutions, their established practices and several criteria of decision making at all the stages of the construction process. In all processes of change, some actors gain and some actors lose. Profit and loss depend on each particular construction project’s context i.e. the actors, their opinions about the change and about the place of the other actors. Direct links (strong links), indirect links (soft links) and oppositions appear during the projects. Direct links (like locks) are for example legal rules that define a space for negotiations, for autonomy of decision-making between planners, collectivities and residents

(present and future). The indirect links often concern implicit choice criteria that are frequently rethought in a sustainability approach. To approach these phenomena we will often refer to the Dutch assessment realized by Van Bueren and Priemus (2002) because the Netherlands is in the vanguard of sustainable development in construction. We will examine the French and the British context through our observations.

### 3.1. The institutional advances and the institutional constraints

In all the European Member States and in particular in the Netherlands and in France, legislative and regulatory changes have been great since 1992-1994 and very great after 2000-2002. These changes were boosted by European directives: energy efficiency (93), quality of the products (98), renewable energy (2001), energy performance of the buildings (2002): and have sometimes been anticipated by the Netherlands in its national dynamic. France, not so advanced, was characterized by the disruption of public institutions after two periods of decentralization (1998-2000 and 2002-2004) and by the rise of regions and cities, this context has existed for a long time in the Netherlands and in the United-Kingdom.

We are not going to list all the laws, the acts, the regulations and the standards that surround the professionals. We are going to present some important illustrations for which we are going to describe the point of view of professional institutions.

3.1.1. Concerning **the regulations**, they are not very malleable except when they contradict each other, which often occurs especially concerning the security of people and property. They evolve periodically and are very restricting for architects, engineers and economists. Nevertheless, some professionals go far beyond the regulations by integrating new environmental requirements in an innovative design based on the principle of voluntary action. The performance of basic regulations, according to the “HQE” code in France and the “NP” code in the Netherlands, are raised every 3 or 5 years and the experimental projects linked to these codes lead the regulations toward stronger requirements. Within this movement and the debate linked to it, a new arbitration should be made between investment and running costs, by anticipating the balance between immediate costs and delayed costs. The process could be slowed down by the professionals that see something to lose or that are unsure of the financial return in the medium term. Today, when professionals and politicians promote, in France, passive buildings (Launch of the “Effinergie” guidelines in 2006 on the Swiss or Austrian model), most of the people see over charging and do not see temporary over-investment. In this context, a carbon audit of projects may help to guide the design decisions better. This is the case in Austria (Vorarlberg) where the finance is more attractive and costs less when the level of energy performance and urban densification increase. In contrast, the British situation does not seem to have this innovative dynamic except in some showcase projects.

3.1.2. **Some building acts and at least some contracting regulations** are barriers to innovation and change, they are sometimes visible sometimes invisible. This is the case in the United-Kingdom with the traditional contract JCT<sup>24</sup> and in France, less strongly, with the law of Management of Public Work (MOP)<sup>25</sup> where the traditional contracts do not help or even prevent working together in a large team from the beginning of a project (as is often the case in the Netherlands). The traditional contracts do not facilitate dialogue; they generate drift and frequent additional costs because the architects and the engineers do not properly check innovations. To make contract rules evolve possibly the best way would be to learn from each other and to build efficient cooperation between the client, the design team and the enterprises.

In France, criteria of competence - references in terms of environmental design and management - could be taken into account in architectural competitions and in the way the design team and the enterprises are pre-selected. Regarding the briefing of urban projects which

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<sup>24</sup> JCT=Joint Contracts Tribunal

<sup>25</sup> The law MOP (management of public works) defines the contractual relationship between the Public procurement management and Project management. It defines the role of the architect in the execution of a project from the initial sketch stage right through to the handing over of the keys. Gradually this law has been twisted, and the actual stages of design and site management have ended up in the hands of engineers and technical consultants –leaving the architect as the artist of the facades.

are difficult to set up, “Study contracts” have been created to build up the brief by comparing and questioning projects by different architect-urbanists. Building the project together to find the best technical solution seems not to disrupt the regulations of professional responsibility. Thus, would it not be better to merge functional briefing and “HQE” briefing (as is the case in the Netherlands) to produce first a briefing which is not so technical and then co-elaborate the detailed briefing and the design in a larger team with the client, the consultants in sustainability and the design team?

In United-Kingdom, the formal institutional constraints concern the traditional contracting system in which the architect may not cooperate with the enterprise during until the design. The PFI (Private Financial Initiative) contracting system allows collaborative design and reasoning in the long term. From experience, uncertainties in medium and long term do not allow an easy sharing of the risks, thus the negotiations are longer, the design time is reduced and the prices are higher for a facilities quality that is questionable. Moreover, the PFI concerns only big projects for which private competitors are not numerous and have little power in the face of the public “sleeping partners” (MIQCP, 2006). These contracting barriers are all the more so as the projects are performing and innovating in sustainability with new risks which are not controlled and could generate divergences, conflicts and additional costs during the construction stages and during the period of use. In the British contracting system, the design team has to describe, draw and specify all the details, even the ones that are at the interface with the contractor’s work, to avoid any complaint from the contractors. To describe, draw and specify all the details is quite impossible when the project is involved in innovation. That the design team has to make these proposals is not desirable because it could be useful to mobilise the knowledge of the enterprises to finalise the detailed design and to achieve the construction. For example, in France the enterprises have kept a strong knowledge-base on which the architects and the engineers could rely, and in the Netherlands the enterprises are often called in during the design of sustainable and innovative projects to give their advice.

3.1.3. The **positioning of the professional institutions in the debate** on design evolution, on the role of the new environmental consultants, on the relationships between professionals; could anticipate or constrain changes. We focus on the architect profession that is, in the three countries, the generalist designer and the leader of the project and is seen as responsible for the project. If the architect is still at the interface of the requirements, he/she could not be, as at the beginning of the 20<sup>th</sup> century, the “deus ex machina”. He/she is now one of the important actors in a shared design.

In the Netherlands, education in architecture and building engineering, are included in a degree course, which is mainly combined. The environmental approach to design was introduced in the university in 1980. The architectural profession has an important role in collaboration from the beginning of a project, with the client and the engineers. This situation is not a problem, and includes the creation of a new profession: the Physics engineer who studies the “ambience” and comfort, and so deals with acoustics, heating, ventilation, hygrometry, lighting and dimensioning the building-envelope. In the context of our research, we could not better the Dutch architectural and engineering professional organizations.

In France, one can wonder if the multiplication of specialised actors and the resulted complexity will be perpetuated? To constitute a new actor for each new function is a French tendency (examples: technical controller, pilot-coordinator, security and health coordinator). This is due to the corporatist “turn inwards” of traditional professions, which have difficulties in anticipating and training themselves for new knowledge, to take on new competencies<sup>26</sup>. Today, in the context of protection of professional status and especially the legal protection of architects (law on architecture 1977), it is difficult to develop design groups composed of architects, engineers and economists as is the case in United-Kingdom. The regulation of the mission of the design team under the law MOP is a typical institutional structure which constrains or prevents such an evolution. The requirements for sustainability in briefing and design appeal call for competencies

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<sup>26</sup> In France, the academic faculty system is based on the same separation between architects, engineers, economists...etc... in contrary to the countries of North of Europe.

and a shared design-process which architects and engineers mainly either do not want to set up or do not know how to set up, even if few begin to engage in this change. Thus at the demand of clients and of the ADEME, three new professions have been created to implement “HQE”: the client assistant, the environmental consultant (for the design team) and the environmental consultant (for the enterprises). As a result, the actors’ games are more complex. A debate on the sustainability of these professions has been launched by “L’ordre des architectes” and the National Union of French Architects (UNSFA), which feel that they are losing the leadership of sustainable projects. In 1996, the UNSFA and the national “ordre des architectes” were active members of the association HQE, on the same level as the ICEB (Institute of the Environmental Consultants for Building) which includes Client assistants (AMO HQE) and environmental consultants. The UNSFA and the national “ordre des architectes” followed the HQE reasoning, but after the first certifications “HQE reasoning-tertiary buildings” delivered by the CSTB and the AFNOR in 2005, the national “ordre des architectes” has left the HQE Association. They think that the certifications are technically incorrect, and they claim they are the only designers who have a global approach to the city and the dwelling, who can defend a global approach to sustainable development (social, cultural, economical and environmental) and who are leaders and responsible for a design in touch with the residents and the users. The critique addressed to the HQE Association was that it takes into account only the environmental aspects of sustainable development. The president of the HQE Association answered that certification was only a means of improving, with the help of third parties, the results of HQE projects, that HQE deals also with criteria of quality of life and with economic criteria and allows the progressive introduction of professionals to sustainable development. In parallel, the UNSFA offered a less severe critique, moderated in tone by the organization of consultant engineers.

These positions of French professional representatives of the design team are not very favourable to a shared design normalised around “HQE” reasoning such as the HQE Association and AFNOR promote today. However, the strategies and the interests of professionals are not only led by their membership of a professional group. Some successful projects, collectively led, and with the “HQE” label, can today be observed (see chapters by Debizet-Symes and by Abrial).

In United-Kingdom, professions are strongly institutionalised. The architects, represented by membership of the RIBA, consider themselves as generalists, but they are often considered as specialists of one part of the project. This situation could be accentuated by the development of sustainable construction. In this context, the RIBA has published a report on redefining the profession of architect, suggesting 5 versions of the profession: regulation controller, client advisor, technical designer and realisation operator, guide for social housing projects, or generalist manager in multi-skilled agencies (RIBA, 2006). The debate is open but it is clear that the last version of the profession answers expectations for the design and management of sustainable projects. The reform of the professions could go as far as the creation of an Institute for Construction to which the architects would be affiliated, together with engineers and surveyors (roughly equivalent to economists in France). With the increase of PFI contracts, others professionals, facilities managers for example, (see Chapter by Grimshaw) are positioned for the management in the long-term and could participate in the management and the design of large sustainable building projects, firstly in Anglo-Saxon countries and then in continental European countries.

### **3.2. The resonance of informal or underlying institutional rules**

Although the research we have conducted gave us only partial information, this information made us formulate a hypothesis that we chose to cross-reference with the evaluation realised in the Netherlands by Van Bueren and al. in 2002.

**3.2.1. Resorting to innovation** for answering the new sustainability requirements reinforces the idea of a divergence of opinions or contradiction of opinions between actors. Then the divergence of opinions or contradiction of opinions can lead to a compromise in order to allow the project to be completed. In France and in United-Kingdom, these compromises could be

observed even in the projects in which the teams did not have good specialised design or management skills. Big efforts had to be made by the clients and their assistants, and a debate - that included simulations and analyses of technically risky solutions- had to be engaged in order for the risks to become shared.

- **The risks** concern essentially the achieving of technical performance, but other risks are thrown in: financial risks, risks of lack of quality in the studies or in construction, risks of late modification of the project, risks of unexpected delays or costs, risks of dissatisfaction by the users. The problems are selected according to actors and according to context, and so a design process of a “constructivist type” (Martin, 2000) and recursive is initiated. This process finds a positive end only after exchange and sharing of the selection criteria for problems and solutions.

- Are **the criteria of decision-making** fixed in function of their real value (example: carbon criteria and/or financial criteria for the choice of a solution for energy supply) or in function of their value for the actor and so always questionable? Are the criteria debated one by one according to the sustainability and functionality of the building and then classified without ignoring the risks taken by each actor? And when there is refereeing, is it fair regarding to the management of financial pluses and minuses?

In a minority of British and French case studies, we have observed huge tensions between the client and the design team. These tensions have finally been resolved in compromises that satisfy most of the initial sustainability requirements and most of the members of the project team. In the both countries, the driving targets, sometimes in conflict, are the control of energy (which has an impact on the architectural and technical design), the comfort of the users (Summer and Winter comfort) and the economy of the project. The other targets have more limited impacts both in France and in the United-Kingdom. However the management of water is very important in the Netherlands.

### **3.2.2. Financial feasibility criteria, legal criteria of the projects and the organisation of decision making.**

The analysis of Van Bueren and Priemus in the Netherlands sets out the financial and legal criteria and the difficulties of integrating them in the project and optimise interaction between actors. With our reading of their analysis and our observations, we can sketch some generalities. There is a heart of traditionalism in the contractors, who do not see how the sustainability approach can be profitable for them; whereas there is a huge enthusiasm from the designers. Simultaneously, the coordination of the project is often deficient, according to a large number of actors, and there is a lack of motivation.

The choice of a site for the project is dependant on urban planning which does not take enough account of future projects; in addition the choice of density and type of infrastructure could be better planned.

The urban design process, the legal planning, the land planning and the planning of delivering a planning permission do not take sufficient account of sustainable construction projects. In addition the designers of buildings, in particular social housing, do not take sufficient account of feasibility studies, of the different motivations of the actors, of the briefing requirements and of plans for realisation.

Paradoxically, the strong decentralisation of public initiatives implies a fragmented process of decision making, limited views of the stakes and of the targets to reach, so several projects satisfy only the lowest standard or the quality prescribed by regulations.

Within housing associations, there is different point of view based on the uncertainties concerning reachable performance and the overinvestment which may be associated with them. The differences are all the more so since only a small part of the construction overinvestment can be transferred onto higher rents. So overinvestment is taken on by the funds of the organisation, but on the other hand the running costs are expected to be decreasing.

In the particular case of housing intending for sale, the final user is not sufficiently or not at all implied in the process of decision, the influence of the consumers is still very limited. In general, the property developers make their financial calculations without taking into account the costs in use. The realisation of small operations reinforces this tendency as unit costs increase, especially if innovative materials are used. Van Bueren and Priemus underline the question of

sharing of pluses and the minuses during decisions taken for reasons of self-interest and without taking into account the point of view of the other actors: a recurrent phenomenon of a lack of shared understanding. The unequal distribution of the pluses and the minuses in the discussion and the classification of sustainability targets is a supplementary factor that influences the actors and often leads them to evaluate in an unrealistic manner the costs and the benefits. These estimations are all the more so since the evaluation is made on the prices of the market without taking into account environmental costs.

Finally, even in the Netherlands, the process is still much too fragmented in many stages which have their own rules, their own actors, their own market and so decision making is both insufficiently shared and decentralized. Decision-making is strongly influenced by professional codes and private targets of profitability.

## Conclusion

The Dutch, French and English experiences seem to underline perceptions that the principal initiative comes from national and local political power, even if change is being initiated through a silent revolution of professional practice, of ways of managing projects and of decision making criteria. Otherwise, the place of the professions in the market are governed by political, public financial orientation as well as by civic regulations, initiatives and obligations<sup>27</sup>.

The protection of the environment has been overtaken by sustainable development. Sustainable development is now a business, in which huge investments have been made (in 2006) at a global scale<sup>28</sup>.

Government policies focus on a more integrated and a better-controlled economic, urban and social development. Thus the Dutch model of sustainable urban design should be generalised, more coherent urban and building studies should be initiated together with new models of interaction. These initiatives, coming from public action, involve several actors and more and more private-public partnerships.

Due to the increase of experimental sustainable projects and sustainability initiatives, the organisations and institutions should be able to capitalise on the results of these projects and initiatives to improve and to build a strong market for sustainable building and urban development.

We suppose that multi-actor organisational learning (Argyris, C., Schön, D., 2002) is the principal vector of a change process for the development which have begun in all the European Member States.

The taking into account of sustainability targets changes the context of projects. Time scales (from short to long term) and spatial scales (from the community to the planet passing by the city) are considered differently. Research, experimentation and professional practices are not any more strictly separated, all of which is essential for the model of organizational learning. This model is linked to models of the capitalisation of experience and of continuous improvement.

The setting up of the model of organisational learning is difficult because it questions customs, decision making criteria and everyday professional practices, all of which are centred on the building rather than on the links between the building and its environment and its social uses.

The building-and-community design model is transformed by the requirements of these diagnoses. In the everyday and institutional context, this off-centered model could engender creativity but also perpetual tension.

Repeated experiments in sustainable design, the creation of tools (to cooperate during the different stages of the project or to evaluate the building during the project or a posteriori) and individual and collective learning could validate a change of contractual and institutional rules. The observation of sustainable building projects reveals a strong will for technical and organisational change and a questioning of the actors about the sustainability of their actions.

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<sup>27</sup> The civic initiatives and obligations follow from scientific researches and opinions movement for a more sustainable development.

<sup>28</sup> According to a studies lead by the PNNUE (National Program of the United Nations for the Environment), the investment of the industrials in sustainable development is about 100 billion \$ (Newspaper Le monde, 13 Juillet 2007).

Agenda 21 is based on the notion of “thinking modernity” developed by Ulrich Beck (Beck, 2001; Vandenberghe, 2001) and is a form of thinking about society by itself.

Choices and technical decisions question, in a political way, the risk that industrial capitalist society may destroy itself; as well as the elected politicians, experts, professionals and residents/citizens should be worried about it and take it on.

We suppose that the institutional constraints we have observed during our research will be progressively and continuously questioned, whereas the new guidelines will become essential and will be disseminated. Urban developers and social housing developers are at the “avant-garde” because they are in a direct relationship and have an account to give to the two key actors in this change: the residents and the local elected politicians. This hypothesis is supported by several research and experimentation projects quoted by Van Bueren, Bougrain and Knorr-Siedow (2002). These projects stress the strategic character of multi-actor learning and the development of this learning by proximity networks, by cities and regions. Within these projects, multi-actor learning seems to be the essential component of community renewal and social housing. These authors compared housing associations in France, in the Netherlands and in Germany; they highlighted the same global social and environmental approach, the similarity of social problems and inventoried the conditions of success or failure for multi-actor collective learning. These conditions of success or failure were: new financial means to find or to mobilise private funds, the requirement of competence and sophisticated information and training systems, the complexity of interaction in the relationship and organisational system, the huge length of time for change (at least 5 years), the tools and management methods are not independent and finally the type of management which could facilitate or constrain the assimilation of new methods. In most of the large projects, the model of management which is developing is composed of a piloting committee, meetings for planning and validation at different stages of the project, thematic meetings, training in techniques and communication, the development of feasibility studies, risk analysis, strategic plans for the long term and for maintenance. Finally exchanges about experiments are undertaken more often whether within one organisation or between organisations.

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