IASP International Association of Science Parks and Areas of Innovation

33rd IASP World Conference on
Science Parks and Areas os Innovation 2016

Russia, Moscow

The Science Park as a Hub for Social Impact, Innovation and Interaction

Workshop

The social impact of innovation

Authors:

Maria Ådahl (maria.adahl@johannebergsciencepark.com)
Björn Westling (bjorn.westling@johannebergsciencepark.com)

Johanneberg Science Park, Sweden

Hosted by:

MOSCOW CITY GOVERNMENT · RVC · FASIE · Skolkovo · MSU SCIENCE PARK · technopark STROGINO

Maria Ådahl
Björn Westling

The Science Park as a Hub for Social

Executive Summary

Science Parks and Areas of Innovation are, thanks to their openness and multi-stakeholder nature, excellently positioned to act as drivers and catalysts of social innovation.

The current paper describes how Johanneberg Science Park has worked with the issue of creating a social climate that fosters and facilitates cross-sector communication and innovation in a new building specially designed for this purpose, developing methods, tools and projects fostering social innovation

The hub of this effort is located in Johanneberg Science Park's new facilities, which provide a unique environment designed to stimulate collaboration, exchange of ideas and cross-disciplinary learning and co-creation.

To conclude, Johanneberg Science Park's experience has shown that social interaction is needed to support and drive innovation and development, while social innovation is a key in meeting an increasing part of society's needs. Thoughtfully designed physical meeting places and innovative office design are key elements in facilitating and stimulating these processes.

Background

Social innovation is becoming increasingly important in many instances in today's society. The accelerating pace of technological development and ever fiercer global competition call for creativity, flexibility and often for unorthodox and cross-disciplinary solutions, all of which need to be fostered in socially favourable and connected environments.

In parallel, the emerging and on-going global threats to people's safety and security that cause large-scale relocation and migration pose complex and severe challenges to cities and communities that need to cope with a large influx of new dwellers, making use of their potential and avoiding segregation and social disruption.

Science Parks, who often operate in a multi-stakeholder and multidisciplinary environment, have a great potential to lead the way in addressing many of the challenging described above. A Science Park can be viewed as a training ground or test bed for new solutions that subsequently can be integrated in larger scale. Johanneberg Science Park in Sweden has identified several important issues that have been the subject of

The Science Park as a Physical Hub for Social Interaction

In today's connected society, having physical meetings is sometimes seen as an obsolete or inefficient practice. However, many studies indicate that in fact, physical meetings are becoming more, not less important as the digital noise around us increases.

For a Science Park, meetings, internal as well as external, constitute what may be the most important aspect of their operation. To be able to provide the framework and physical prerequisites for frequent and successful meetings is a vital success factor for a Science Park.

The Science Park's latest building, which was inaugurated in June 2015 is designed with meetings and collaboration in mind. Attractive social areas for meetings, coffee breaks and lounging are combined with state-of-the art office furniture and quiet spaces for concentration and reflection.

Our ambition is that Johanneberg Science Park will function as a meeting place to provide new perspectives, contacts and knowledge. Future challenges place higher demands on holistic thinking in order to develop new innovations and build a sustainable society. Together we are creating the conditions and desire for innovation and creativity that is needed en route towards sustainable development of society.

The hub of this effort is Johanneberg Science Park's new facilities, which provide a unique environment specifically designed to stimulate collaboration, exchange of ideas and cross-disciplinary learning and co-creation. The new building, which was inaugurated in June 2015 is designed with meetings and collaboration in mind. Attractive social areas for meetings, coffee breaks and lounging are combined with state-of-the art office furniture and quiet spaces for concentration and reflection. Of particular interest is the new "collaboration area" for up to 75 occupants, where companies and organisations of different sizes and sectors will work together in an open space office environment. The design and operation of the collaboration area is part of a research project, "Design for Creativity and Well-being", which is part of the Smart and Sustainable Offices flagship program in EU's Climate-KIC.

Smart and Sustainable Offices "Design for Creativity and Well-being"

Johanneberg Science Park has taken a scientific approach to efficient office work and meetings by being part of the project "Design for Creativity and Well-being" within Smart and Sustainable Offices", funded by the European Union's climate initiative Climate-KIC.

The project “Design for Creativity and Well-being”

- incorporates all three dimensions of sustainability (economic, environmental and social), providing better performance than a conventional office.
- is life cycle optimized to use resources responsibly, increase energy efficiency, and reduce greenhouse gas emissions as well as overall cost.
- provides a working environment that positively affects health and wellbeing for the users, improving their actual performance and creativity.
- promotes an appropriate and sustainable usage by guiding user’s behaviours, acknowledging their active role and taking their psychosocial needs and demands into account.

In the “Smart and Sustainable Offices” project, Chalmers University of Technology researchers have created an office environment designed to provide a flexible, modern and dynamic work experience. State-of-the-art furniture and appliances combine to create a feeling of openness and welcoming combined with efficiency and ease of use.

During the course of the project, the physical work environment is continuously recorded (temperature, humidity, CO2, noise, etc) and the experience of the occupants is monitored through interviews, questionnaires and observations. Positive and negative aspects (Fig. 1) of the work environment are brought up for discussion with the objective of bringing forth new solutions and layouts to be tested.

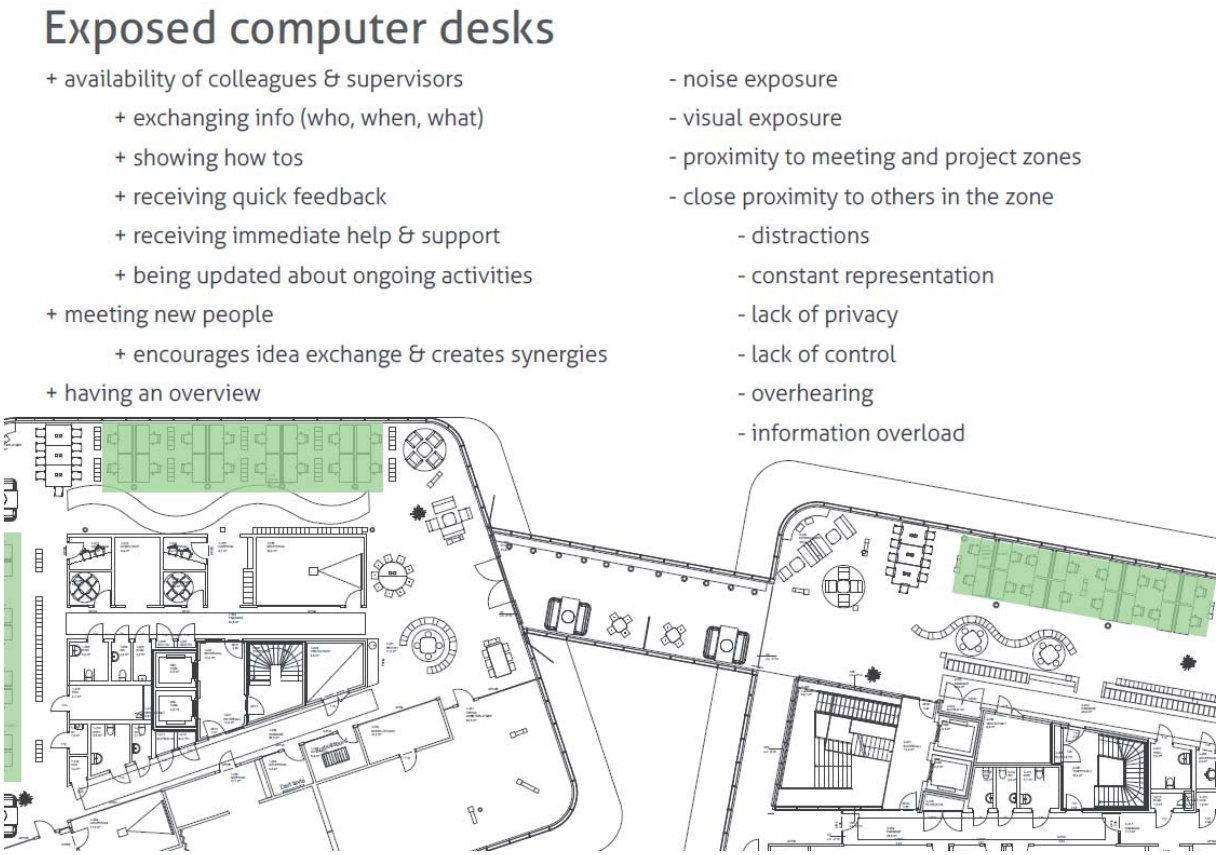

Figure 1 Smart and Sustainable Offices: Analysis of feedback from users (source: Maral Babapour, Chalmers)

A novel aspect of the new office is that multiple organisations co-exist in the same activity-based office. Thanks to flexible rental conditions, this collaboration area is perfectly suited for project groups or temporary formations that need to work together in a creative environment, as well as small enterprises looking to become part of a knowledge-rich environment.

Johanneberg Science Park has the focus areas Sustainable Urban Development and Green Energy, which gives a unique possibility to use our own environment as a living lab for studies and

prototyping together in triple helix; academy (researchers and students), industry and companies. The goal is to bring more companies to the area to increase the pace for collaboration. Prototyping is close to the academy and therefore included in the education.

In November we celebrated Johanneberg Science Park's 5th anniversary and inaugurated the meeting place. With

Johanneberg Science Park Phase One

Phase One in Johanneberg Science Park's development was inaugurated in November 2015 with a gathering of over 300 politicians, managers, vice-chancellors, business people and researchers. The 8 200 m^2 building consists of two parts, rounded in form and oriented so that daylight is maximised in the spaces between them. Landscape surrounding the building is conceived as a green oasis where vegetation and water are important elements.

Johanneberg Science Park's dramatic shape and glass elevations facilitate social interaction so as to facilitate knowledge exchange for the companies and organizations housed in its 8,200 m^2 of floor space. The ground floor, which is open to tenants, students and the wider community, features furniture chosen for its flexibility, accommodating different types of meetings and social interaction. The building tells the story of its construction: raw concrete surfaces, traces of earthworks, chalk, fingerprints, scuff marks and knocks received during construction are left exposed.

The building was designed to meet, and ultimately exceeded, Sweden Green Building Council's Miljöbyggnad GOLD certification. The client and tenants committed during the project to a sustainability programme which considered anything from the transport and materials used in construction to the building's environmental footprint. Johanneberg Science Park creates a workspace for 400 people; the collegial atmosphere generated by the building's design and programming aims to appeal and develop a much wider outreach.

"We perceive a large and growing involvement with Science Parks and an increased significance for Sweden's future, within both the business and academic worlds. We are impressed with the interaction we are observing with the Västra Götaland Region (VGR) and Western Sweden. Initiatives such as these are showing the way for the rest of the country", says Jenny Lundgren, Communications Manager for Swedish Incubators and Science Parks (SISP).

"The challenge going forward for us is to create the conditions for meetings between different people and sectors and continually have an influx of wide-ranging expertise", says Mats Bergh CEO Johanneberg Science Park.

Numerous studies show that buildings can impact a person's health, and as citizens of modern societies spend 90 per cent of their time indoors, this is more important than ever.

"Buildings and urban spaces should be designed first and foremost around their occupants," says Dr Sergio Altomonte, architect and associate professor in the department of architecture and built environment at the Nottingham University. "The importance of architecture as a trigger to physical, physiological and psychological wellbeing is nowadays becoming a topic of significant relevance."

"The impact architecture has on a person's mood is huge. Arguably these are the fundamentals of architecture: not how it looks, but how we feel it, through the way it allows us to act, behave, think and reflect," says Dr Melanie Dodd, programme director of spatial practices at the Central St Martins art school. "But it's not necessarily causative - meaning architecture may not have a direct relationship with our mood that is measurable. It may be complex, subjective and happen over time and with use."*(Independent 19 April 2016)*

The Science Park has high ambitions on the office buildings that we develop and we have already been awarded an architectural prize for the first phase.

Johanneberg Science Park Phase Two

The second phase of Johanneberg Science Park is designed and the first tenants are expected to move in 2018. The building will be placed closed to Phase One and be connected to the Chalmers university building via long indoor street. The building will be an innovation project also for the

property-owner and for the tenants within the science park. The building will have space for collaboration projects that also includes the building, the space, the actors and activities in the building. Examples of innovation projects that are planned to be placed in the building include;

- Future indoor bus stop for the electric bus service “ElectriCity” that links Johanneberg Science Park with Lindholmen Science Park.
- Visual Arena, a new test site for visualisation of city planning and building projects, built environment, 3D visualization, management in the building sector,
- All Age Hub, a hub for new technology and solutions for elderly and disabled in the healthcare of the future.

The building process will include the actors through the phases from planning, program, design and contraction. Therefore the buildings will match the needs of tenants and the content of the Science Park. The building is designed to be a hub for all kind of innovation; technical, economic and social.

Activities, Methods and Tools for Social Impact and Innovation

An environment fostering collaboration and co-creation rarely exists by chance, it needs to be planned, developed and nurtured in order to fulfil its potential. This applies to the physical environment, and just as much to the framework of activities and tools that are used to drive collaboration and social interaction.

About 150 companies are located in Johanneberg Science Park, with a total of about 1 400 employees. Additionally, the university staff numbers about 3 500 and students 11 000. One of the main tasks of Johanneberg Science Park is to create and maintain a dynamic and creative atmosphere for all these stakeholders, a sense of identity and of the added value of belonging to the Science Park.

The hub of these activities is in the Science Park’s new buildings (Fig. 2)

Figure 2 Johanneberg Science Park Phase One

This first phase of the Science Park's expansion was inaugurated in November 2015 and consists of two five-storey buildings connected with bridges. There are about 400 workplaces in the two buildings together. Large and small enterprises as well as university staff are housed in the buildings. In the ground floor, there is a café and a restaurant.

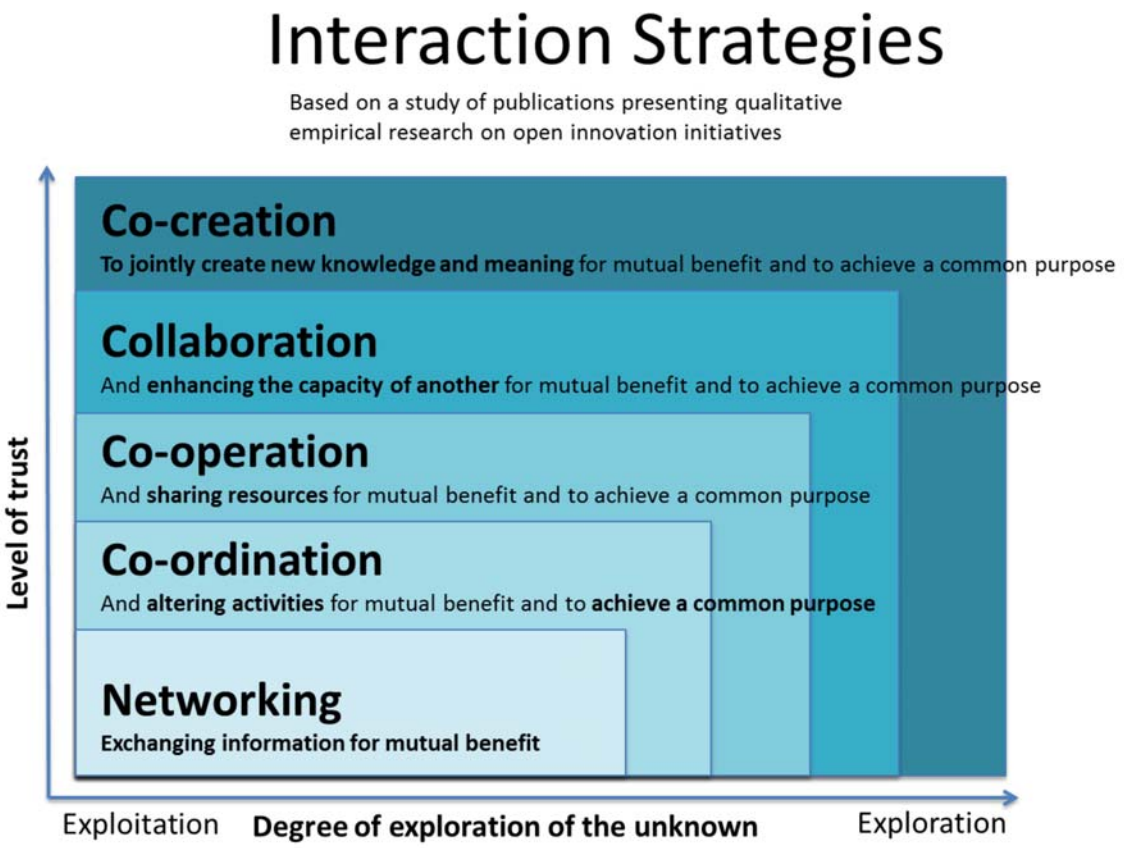

Figure 3 Interaction Strategies diagram

According to a research project recently led by Johanneberg Science Park, in collaboration with researchers at Chalmers University of Technology there are several kinds of interaction possible between partners (Fig. 3), each with its own characteristics. The easiest and fastest way to interact is by networking and this is often a starting point for entering into deeper forms of co-operation and collaboration. In order to stimulate this important networking, Johanneberg Science Park arranges a number of activities for its tenants, most of them taking place in or around the new buildings. Examples of activities include

- Lunch seminars - an organisation presents a project or idea, a light lunch is served
- Breakfast meetings - an organisation presents a project or idea - breakfast is served
- "Academic quarters" - a quick presentation from an academic researcher
- Lunch raffles - enter your name and you are paired with a new acquaintance for a lunch date
- Running classes - Improve your running technique in a group under direction of a competent coach (Fig. 4)
- "Walk and talk" - take a walk in the open while having a conversation on a set topic
- Relay races and sports tournaments - match your team against your neighbours'
- Quizzes - after hours social activities
- "House coffee" - all tenants have coffee together, one organisation hosting
- Peer Assist sessions - a managed procedure for helping to solve problems and find new knowledge
- SME member's network including a number of joint activities

Figure 4 Running class with coach at Johanneberg Science Park

All these activities aim to bring people together and to enable the flow of information between the tenants in the Science Park environment. These activities also contribute to creating a positive and friendly atmosphere where people feel safe to express ideas, views and opinions.

These tools, in combination with the collaboration-friendly layout of the Science Park's new buildings have contributed to a strong increase in the number of meetings and social interactions among the tenants, something which will stimulate further collaboration and in the long term also lead to more innovation and co-creation.

Example Projects

Johanneberg Science Park develops demonstration projects in collaboration with its owners, and since a great deal of focus is placed upon sustainable urban development at the park, projects tend to naturally concern areas such as living environment and issues related to housing. Sweden has, along with the rest of the world, both expansive plans to build more accommodation for its inhabitants, as well as great challenges associated with reaching the UN's goal on sustainability. In collaboration with two of Sweden's largest construction companies, HSB and Riksbyggen, two projects are currently developing regarding future housing seen from all conceivable aspects of sustainability.

This chapter will primarily describe how the projects have addressed the social issues, and how they might contribute to more socially sustainable living environments. The projects are developing according to quadruple-helix constellations, and maintaining an active dialogue with residents and citizens is an important part of both projects. There is also research being done at both Chalmers and the University of Gothenburg that is deeply embedded in the projects. The chapter begins with describing the innovation models analysed prior to the development of the projects, which were summarized in a report by Björn Andersson, associate professor at the University of Gothenburg, active in the project Positive Footprint Housing.

Social sustainability – definitions

"The discussion regarding society's development seen from a perspective of sustainability has its explicit origin in the UN-report "Our common future", authored by the so called Brundtland Commission in 1987. The term "social sustainability" is never used in "Our common future", but the importance of different types of social conditions are emphasized and discussed at great length, which has been mentioned previously, and as an example, the need of "social equity" is stressed." This extract was taken from Björn Andersson's report on social sustainability. There are a number of theories and methods that have been tested and analysed within Johanneberg Science Park's development projects for the sustainable housing of the future.

McKenzie

"Social sustainability is a state of improved quality of life within certain social communities and processes within these communities that can evoke and sustain this state". "Social sustainability occurs when formal and informal processes, systems, structures and relationships actively support the capacity in current and coming generations to create healthy and viable communities. Socially sustainable communities are just, diversified, democratic, have a strong sense of unity, and provide a high quality of life. "

(McKenzie 2004:18/WACOSS, (McKenzie 2004:12,).

ISO 26000

There are seven principles for social responsibility according to ISO 26000

- Accountability (society, environment and economy)
- Transparency (decisions and activities)
- Ethical behaviour
- Respect for the stakeholders' interests (identify and involve these individuals or groups)
- Respect for the rule of law
- Respect for the international norms of behaviour (co-responsibility)
- Respect for human rights

These principles are closely related to the procedural aspects of social sustainability, which have been mentioned above. The standard set forth for social responsibility is commonly used by companies as well, but is then referred to as CSR (Corporate Social Responsibility). This form of protocol can provide clear guidelines for how business should be developed and run. They are typically also associated with evaluation and certification.

There are also some models that, although not being as explicit in their phrasing, serve a purpose in providing guidance regarding the practical implications and applications of social sustainability. One such model is the so called "Egan Wheel" (Fig. 5). This "wheel" was developed by a British commission, headed by sir John Egan, and depicts how society can become more sustainable.

Figur 5 The Egan Wheel

Positive Footprint Housing - a Socially Sustainable Way of Living

Positive Footprint Housing is a collaborative project set in Gothenburg involving Chalmers, Riksbyggen, the University of Gothenburg, Göteborg Energi and Johanneberg Science Park and which is intended to create a holistic perspective on and approach to sustainable housing- and urban development with the inhabitants held first in mind. A research project and a housing project is conducted simultaneously, and marks the beginning of a long-term collaboration where researchers and students can evaluate the most recent results in a full-scale laboratory.

The project focuses on social sustainability, energy efficiency and decreased environmental impact, and includes research expertise from areas such as architecture, technology and social sustainability.

The collaborative project ”Positive Footprint Housing” conducted within Johanneberg Science Park has resulted in the construction of 100 new apartments that are now for sale. The apartments provide meeting places, and are designed and intended to facilitate and be conducive to meetings both amongst the residents and other people frequenting the area. The building creates many added values to the neighbourhood which would not have been generated had it not been for the project being developed in a Science Park context, which provides a close dialogue with many different actors and the involvement of researchers with appropriate backgrounds. The residents also contribute to making the Science Park into a lively neighbourhood with many people moving around and through it, which in turn creates a number of positive social effects and results at the Science Park.

In order for the project to develop into a housing project on the frontline of research in terms of social sustainability, researchers from the University of Gothenburg have been active in the project.

Björn Andersson, associate professor at the Department of Social Work, has conducted the research study regarding social sustainability in Positive Footprint Housing. The work has been designed as action-research, and Björn has actively participated in that research as well as in dialogues throughout the entire project, including matters of the design and the construction-related issues. This has created a collective reflection on social sustainability and a gravitation towards details that could potentially benefit social sustainability, which makes this set-up unique. Some of the participating actors have been the City of Gothenburg, architects, researchers and students from Chalmers, the University of Gothenburg, and Johanneberg Science Park.

When working with social sustainability in relation to an actual business and its daily operations, you soon discover that the matter of definitions, keywords and models only constitutes one aspect of how social sustainability manifests in reality and can be practically applied. There are a number of other circumstances and factors that have a great deal of influence on the outcome. One such factor is the scale and size of the project. Positive Footprint Housing is a relatively small project; it is comprised of a block of apartment buildings with a total of 75-100 apartments. The size of the project is naturally a factor to consider when determining what issues and matters it can successfully address. Other important factors are the location and the extent to which different actors with differing interests are involved in the evolution of the project. If Positive Footprint Housing were to formulate concrete goals for social sustainability, its complex and multi-dimensional situation needs to be considered and put into words. Obviously this complexity contains a number of interests and different perceptions of reality. This reinforces what has been previously emphasized; that the formulation of social sustainability is not only a knowledge-based issue for researchers, but is just as much a matter of political and value-based judgment. And what people or bodies who have the authority to make decisions regarding these matters, quite naturally comes down to power.

HSB Living Lab - A Research Project for Future Housing and Living

Between 20 and 30 student apartments are planned to be built at Johanneberg Science Park. What is unique about the project is that researchers and students can try different solutions to future housing in an environment actually inhabited by people. A common exhibition space will be built in the entrance hall where the results from the project are displayed so that anyone interested can take part of them. It is a collaborative project involving HSB, Johanneberg Science Park and Chalmers University of Technology, among others.

HSB Living Lab is a portable housing- and research-arena, and the project is one of a kind in the world and completely unique. This is where students and researchers of all ages and nationalities will live as research on innovative technology, sustainability, architecture and social connections will be conducted simultaneously and around the clock.

The project will be limited to ten years and constructed using movable modules. The construction is scheduled to commence during the summer of 2016. As the new tenants move in to the premises, so will the research. A number of research projects related to HSB Living Lab have already been initiated, and the results from this research will be presented continuously throughout the years during which the building is active.

The primary focus of HSB Living Lab will be placed on social sustainability, both directly and indirectly. Many people are confined by our perception of what housing is and how housing and accommodation traditionally has been designed, which naturally results in that new constructions tend to be developed and designed along those traditional norms. This limited perspective and adherence to tradition restricts the opportunities to develop new ways of designing housing that would make it possible for more people to have a home. HSB Living Lab provides a platform through which new solutions and ideas for future housing will be explored, such as what facilities and functions residents could utilize commonly, and how new floor plans can be developed which considers the individual's need for a comfortable lifestyle rather than the traditional and more practical approach to using the space available. The research conducted in the building will make it possible to find out first-hand how the residents are experiencing these new solutions. HSB Living Lab will also develop flexible solutions that take cubic meters and their functionality as a starting point, rather than the number of square meters. People's behaviours in relation to the building, the decoration and the usage of resources are central to this living lab of the third generation. The inhabitants take active part in the research done, and both quantitative and qualitative measurements are done continuously. One concrete example of how the project has developed solutions that benefit both the social environment and contributes to a more efficient use of resources, is the new laundry studio in HSB Living Lab.

The laundry studio will be centrally located on the ground floor, almost as a lobby would, with features and functions that make building a sense of community, working and doing other activities, possible. The studio will provide the opportunity to explore how we as individuals can develop

regarding caring for our clothes and functions connected to sharing utilities and exchanging knowledge, as well as developing technology and machines that save both water and energy.

A number of experts from Chalmers, HSB, Electrolux, Tengbom and Bengt Dahlgren to mention a few, have been working on developing the concept of the laundry studio (Fig. 6).

Figure 6 Yesterday's laundry room becomes the laundry studio of the future where there is space for building the community and working, while waiting for your clothes to get washed.

IS-COM – Circular Economy for Social Integration

The final project example centres on the subject of Circular Economy and Industrial Symbiosis. The project IS-COM, led by Johanneberg Science Park and funded by Climate-KIC, examined the role of communities such as municipalities in setting up Circular Economy systems.

One of the proofs of concept in the project was Gothenburg Northeast. The north-eastern parts of Gothenburg are characterised by segregation and high unemployment, but also of large rural areas and natural resources. In the EU-financed project Utveckling Nordost (NorthEast Development), which was finalised in December 2013, a pre-study called Stadslandet (City-country) mapped resources and competence for peri-urban farming and food production in the area.

This proof of concept focuses on organically produced chicken. The pre-study Stadslandet has identified a large, local demand for such chicken. The Gothenburg municipality has a stated desire to reduce the carbon footprint of their operations, including lower emissions associated with the food being served in schools, pre-schools and elderly homes. One step might be to switch from beef to organic, locally produced chicken, but the availability of the latter is too low. A demand from local supermarkets and restaurants has also been identified.

Replacing Swedish beef with organically produced chicken from Gothenburg/NE the CO2 emissions can be reduced by 24 kg CO2e/kg boneless meat. By using industrial symbiosis methods and mind set as catalyst, identified links that connect local farmers, competence, logistics partners and demand side could be realized and approx. 3 000 tonnes of chicken could be produced annually. The chicken PoC would then reduce climate emission by approx. 72 000 tonnes annually (Fig. 8).

During the project work, it soon became evident that the Circular Economy ideas also provided great benefits concerning the social well-being and integration issues in the district. It was concluded that there is a large demand of organic food, especially in the city centre, but the people from the consumer side, i.e. restaurants and grocery stores, need to be involved in symbiosis work. This provides a number of opportunities for small companies based on foodstuff production, wholesale and logistics to form and flourish. It was also clear that among the residents of the area there were a large number of people with the requisite skills to take up such activities. This included former

farmers, breeders and aquaculturists. In NorthEast Gothenburg, there are also various non-profit organisations that are natural elements in a symbiotic cooperation. These are driven by factors such as social inclusion, opportunities to meet like-minded people, safety and (local) commitment. Lately there has been a development towards more economic thinking among these organisations, as that could be a ticket to a clearer role in society. This could definitely have positive effects in the long run.

In this project, Johanneberg Science Park also provided the interface between researchers, expert consultants and the SME's and citizens interested in engaging themselves in the circular economy system.

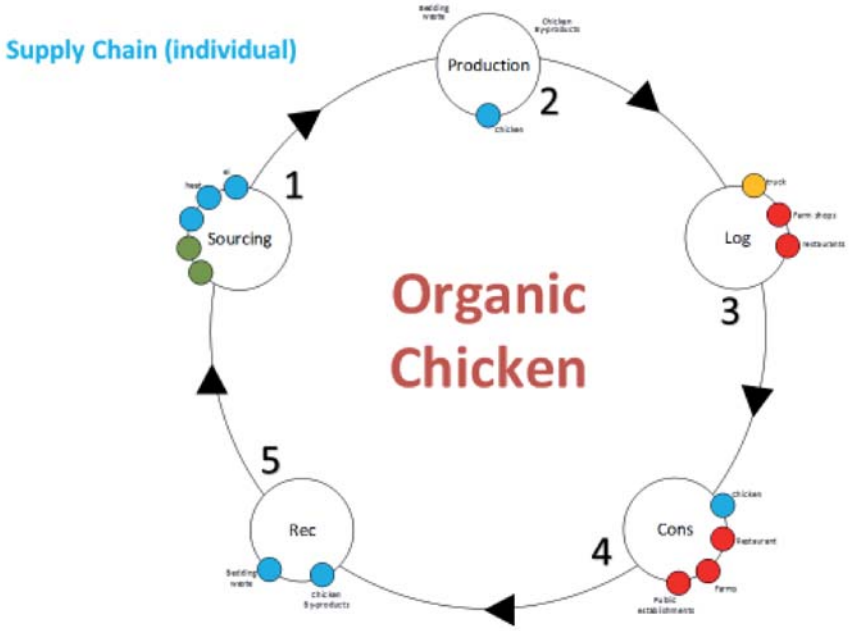

Figure 4 Supply Chain Model of Circular System

Conclusions

The over-riding theme in this paper has been the role of the Science Park in these processes and the aim has been to highlight the possibilities and potential that have been exploited by Johanneberg Science Park and that are available in varying degrees to every Science Park. Science Parks have a unique position as they are geared for collaboration and naturally rest on a multi-stakeholder foundation.

In this paper, the following themes have been explored:

The role and properties of physical infrastructure and meeting places

A thoughtfully designed and equipped office environment is instrumental in creating social interaction, cross-disciplinary meetings and innovation. This has been confirmed by the early results from Johanneberg Science Park's new buildings where collaboration has increased dramatically since moving into the new premises.

Examples of tools and activities to stimulate social interaction

Collaboration and co-creation don't happen by themselves. In order to achieve deeper interaction between different actors, there needs to be a constant stream of networking and collaboration opportunities. Johanneberg Science Park works consistently with developing models for interaction and providing these opportunities for its tenants and stakeholders by arranging a wide range of seminars, workshops, meetings and social events.

Examples of projects that utilise meeting-places and activities to attain greater social interaction and integration

The paper has described several projects that aim to increase ecological as well as social sustainability by creating meeting places and utilising methods and activities developed by the Science Park. In all these, Johanneberg Science Park has played an instrumental role as facilitator and idea broker between stakeholders from academia, industry and government.