MASTER KEY
Making Leiden University Sustainable
About this guide
The Master Key report is an executive summary of the background report “Keys to the Future”. The goal of the Master Key is to provide the main results and recommendations found in the background report in a graphical, easy to read format. This report will serve as a support document for the purpose of formulating a new environmental policy for Leiden University for the period of 2015-2019, since the former environmental policy expired in 2013.

Commissioned by
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Leiden University, as one of the top 100 universities in the world, bears responsibility for its actions, its community and its environment, now and in the future. Being internationally oriented and research based, it can play a huge role in tackling global challenges. Leiden University should be aware of its moral responsibility and position before ambitiously working on enhancing their role for the needed transitions towards a not only sustainable, but regenerative future.

The researches of this guide employed a holistic approach and systems thinking after analysing the single fields that need to be considered with regard to sustainability, acknowledging the different planetary boundaries. Key fields were identified in which the university leaves an environmental footprint and in which also its community, being the consumers and conservers of the present and the future, need to be informed and educated.

**HOW TO READ THIS GUIDE**

This guide contains three main parts:
- Vision for Leiden University
- Summaries of each of the six key fields supporting that vision
- Description of four suitable projects that integrate the key fields

**Describes the relevance and importance of this topic**

**Illustrates the successes and positive developments regarding sustainability at LU**

**Lists recommendations and ideas that should be implemented**
VISION FOR LEIDEN UNIVERSITY

The ultimate environmental sustainability goal for Leiden University would be to become a leading university in sustainability in The Netherlands by 2050. This vision can be achieved by first establishing and then reaching a set of specific targets for 2050. The three main targets, which are at the same time the outcomes from the key fields of actions, are defined as Neutrality, Leadership and Innovation. Each target can be considered equally important towards the goal of sustainability for Leiden University.

**Neutrality:** Reduce the environmental footprint to net zero by 2050, resulting in CO2 neutrality and zero-waste.

**Innovation:** Provide an education towards innovation for low-impact behaviour, climate education and research of new green technologies and behavioural eco-trends. Leiden University will be a ‘Living Lab’ for future leaders with a multidisciplinary approach for sustainability challenges.

**Leadership:** Lead by example of sustainable practices on Leiden University campuses. Leiden University will be a world leading university in tackling global challenges for new solutions and exemplary sustainable behaviour.

To achieve these targets, strong foundations with key sustainability actions from a large and diverse key fields are required. The key fields or pillars of the base of the pyramid are: “Education and Research”, “Governance”, “Buildings”, “Procurement”, “Emissions, Waste and Mobility” and “Communication.” Each of the key field’s strategic actions will be leading to the above described vision, but also to other desirable outcomes such as: Community engagement, enhancing of Leiden University image (branding), and a more resilient campus prepared for climate change. In addition to that, an improved campus experience for students and staff, social responsibility, individual responsibility and amongst others, collective benefits are gained, which in its entity will also become a stepping stone towards Leiden University’s aim: Leiden University is a leading university in sustainability in The Netherlands!
Leiden University plays an important role in knowledge creation and exchange in our global society. As one of the top 100 universities in the world, LU has a moral responsibility in supporting and stimulating researchers to tackle the challenges that we are facing. Many leaders of the future are formed by the content of their education and research. Students, researchers and staff are capable of being change agents in their sphere of influence. Therefore, educating the community that is formed by Leiden University about sustainability challenges and preparing it for the future is of vital importance.

- All students of LU who are interested in sustainability have the choice to follow one of the three interdisciplinary sustainability minors (Sustainable Development, Entrepreneurship for Society & Responsible Innovation) or the master Industrial Ecology.
- Within the disciplines of Biology, African studies, Law, Political Science and Anthropology students are able to choose a sustainability (related) master connected to their discipline.
- LU contributes with 53 (of 1,260) ongoing researches to the knowledge on sustainable development.
- In nearly every faculty (except LUMC) sustainability (related) research is identified.

- **Communicate/transparency**: Update user friendly overview of education and sustainable research on website; communicate best and bad practices; give open access to all relevant data, so students/researchers can explore sustainability of LU itself; sustainability research award
- **Connect Community**: Empower the present sustainability network of researchers and students: internal communication and supporting platform, by for example Green Office.
- **Integrate**: On 10/10, national Day of Sustainability provide lectures/debates about role of discipline for sustainable development. → Define role of discipline for sustainable development & Integrate obligated sustainability courses throughout relevant disciplines.
Institutional theories of organizations provide a rich, complex view of organizations, which help to explain organizational behaviour. Leiden University is an actor in the web of institutions, laws, regulations and rules – implicit or explicit – its actions are unavoidably shaped by these factors. This also becomes apparent in the governance structure of Leiden University, where the university has committed itself to several multilateral agreements, as well as internal policy documents that contain sustainability goals, ambitions, targets and timelines. Evaluating these is important in explaining the success or failure of the implementation of environmental policy.

- Staff tasked with implementing sustainability policies
- Commitment to policies
- Certification schemes (e.g. BREEAM-NL)
- Partnerships (Leiden-Delft-Erasmus Centre for Sustainability.)
- Initiatives, e.g. Green Keys
- Working groups within university and between different universities

- Take initiative in extending/making policy (e.g. extending Convenant → they already comply and now they can profile themselves as environmentally aware)
- Start more partnerships (e.g. with city, NGOs, industry, own suppliers)
- Install Green Office with direct link to university, e.g. staff member as head of Green Office, own office, facilities, mandate etc.
- Transparency and dissemination of policies, evaluations and meetings.
- Engage students and staff through stimulating incentives.
- Decentralize costs
• ~40% of the energy consumption comes from buildings.
• MJA Leiden needs the lower its energy consumption by 2% each year
• People spend around ~70% of the time in buildings!
• Add value to real state
• Add ‘recognition’ and branding to Leiden University – Best practices!
• Reduce environmental footprint of buildings (CO2 emissions, water consumption)
• Increase liability and liveability
• Big opportunities of improvement: Cost savings, Resource Efficiency, Health, Enhanced productivity of students and staff, Reduce heat island effects and increase biodiversity.

To evaluate the building’s sustainability performance of Leiden University three building categories were established:

A total of 22 key performance indicators from five main categories (water efficiency, energy efficiency, waste management, environment quality, sustainable sites) were evaluated for a total of 21 buildings each. The buildings were than ranked between 3 and 10 according to their performance. The graph below summarises all buildings on their overall sustainability performance.
• Leadership and example on buildings vision and policy. Sustainable buildings vision with an integrated plan that allows a verification for continual improvement, following the methodology of the EPP and ISO14001: Plan, Do, Check, Act.

• Use the methodology made in this report to evaluate the sustainability performance of the buildings in LU campus for the upcoming years. This robust methodology gives Leiden University the opportunity to have a unique set of key performance indicators to evaluate their sustainability performance.

• Establish a central management for data gathering and data consistency check, since data quality is essential to monitor and evaluate the sustainability performance of buildings.

• Benchmark of energy and water performance per building within Leiden University Campus and different universities in The Netherlands. For this a methodology has to be implement and new data needs to be gathered. Of special importance: water consumption per building and building use (percentage of the GFA destined to which of the following uses: offices, class room, common rooms, laboratories).

• Operational recommendations: Inform occupants how to use the buildings. Educational campaigns to improve: waste separation, water and energy use reduction. Environmental awareness and environmental education are key factors for energy saving and increase on the recycling rate.

• The technical recommendations are structural recommendations, normally more costly, but with a long lasting effect on the building’s operations and management. They are long-term solutions aimed to improve the sustainability performance by improving the key performance indicators with projects like: green roofs, living walls, rainwater harvesting and water recirculation.
Product Procurement

- Products and services make up about 50% of the university’s budget
- Leiden University has a large budget and thus the responsibility to purchase sustainably
- Source and amount of products can determine a large part of a university’s sustainability performance and how the university is perceived

- The university’s environmental policy, which expired in 2013, adopts the commitment to the “Covenant Duurzaam Inkopen”, which states that for the time until 2012, sustainability considerations need to be taken into account in at least 50% of all purchases.
- Internally, there is a strong policy-following attitude towards sustainable procurement.
- Externally, there is a lot to improve about the sustainable procurement policy. The criteria merely provide the lowest standards for sustainability and criteria become obsolete quickly. In the same evaluation, survey responses from participating organisations indicate that the largest obstacles for successful implementation are not knowing that criteria exist and insufficient knowledge or expertise among staff.
- LU still purchases according to RVO-standards
- Performing comparable to other universities

- take a more ambitious role in sustainable procurement, committing to their procurement value of “Proactivity”, e.g. re-initiating the Sustainable Purchasing covenant in the VSNU
- inform: (prospective) students. Exercise transparency throughout more purchasing operations. Right now, efforts are being made to meet RVO-standards, and they are not even recognised.
- employees. A key factor in successfully implementing a sustainable purchasing policy is training of employees. Employees create the necessary basis of support for sustainable purchasing, as different faculties and departments are the main customers of the purchasing department. Moreover, not only employees at the central purchasing department make choices that could affect the sustainability of the
system, but also the individuals that make smaller, more frequent purchases. Training of employees will therefore address three issues that have been mentioned in this chapter: the potential lack of support among employees, the lack of overview over decentralised purchases and the lack of knowledge or expertise to judge sustainability criteria.

**Energy Procurement**

- Energy constitutes both a significant part of the budget as well as of the total CO2 footprint of Leiden University. Energy amounted to 6.9 million euro in 2014, which is more than 20% of the total costs of accommodation, and 1.5% of the total costs of the university.
- In terms of CO2 emissions, the contribution of energy is even more significant, where electricity accounts for 3% of the CO2 emissions and heating for more than half of all the emissions. The university aims to make their electricity- and gas use more sustainable, which would decrease both the environmental impact and costs.

- Solar panels produce 15000 kWh annually → stimulates local production and sustainable development
  - Energy savings new science campus (97% efficiency improvement for heating)
  - 100% green electricity from the source with the lowest emission factor and cheapest guarantees of origin

- Continue guarantees of origin from hydroelectricity plants, but investigate the option to diversify the portfolio of guarantees of origin to include Dutch green energy projects.
- Investigate possibility to increase solar energy production.
- Sublet roofs to companies that install and operate solar panels.
- Buy VERs to compensate for the CO2 emissions associated for the gas use. To comply to financial constraints, it is also possible to compensate only part of the CO2 emissions. VCU's can be bought to compensate for CO2 emissions, as well as contribute to the university’s objectives in environmental and corporate social responsibility ambitions through stimulating specific sustainable projects in developing countries or in the Netherlands.
Waste, Emissions and Mobility

**Waste**: production and consumption of materials involves the use of energy and materials. Increasing demand causes pressure on the environment. The processing of waste materials is energy intensive and causes emissions to the environment.

**Emissions** come from refrigerants used by air conditioning, freezers and refrigerators. LU’s use of HCFCs and HFCs, ozone-depleting gases has increased manifold from 2012 to 2013.

With more than 23,000 students and more than 5,000 employees, as well as several locations scattered through Leiden and The Hague, the university causes a lot of mobility.

- Despite a lack of waste policy targeted at a certain recycling rate, the results are fairly good
- Waste streams are steadily decreasing with an average of 3% per year
- Leiden University performs similar to other universities in terms of waste production per student or employee
- Leiden University commissioned a mobility study
- High share of people travelling by bike

- Comprehensive waste policy, to be distributed internally and externally
  - Communication with other universities about the success of their projects, such as the plastic bottle recycling programme and the re-use of university furniture through the sale in a webshop
  - Monitoring and analysis of trends in various waste streams
  - Separation of organic waste, which will reduce bedrijfsafval by 20-25%. It will contribute to the environmental performance of the waste system, while costs will be comparable.
  - Separation of plastics as a large share of costs of processing bedrijfsafval are caused by transport rather than the incineration
- Limit use of refrigerants as much as possible and pre-plan for phase out from 2020
- If there is no alternative transport mode to flying, then choose a CO2-efficiency airline and preferably a direct flight and/or compensate CO2-emissions from the flight
- Transport policy: Stimulate use of bike and public transport through a financial compensation of public transportation, provision of bikes or making aware of favourable tax conditions
One of the aspects that makes sustainability communication so relevant is that it seems a wasted opportunity when much effort has been invested in a sustainability (related) project, learning opportunity or research, but the community or public is not aware of it. It is also an unused chance for the community to contribute to the fostering of the aspired development, to build on the existing accomplishments or even to get inspired to carry out their own projects. After all, it can provide a great deal of motivation when people are given the chance to display their work, getting positive feedback and social recognition in return. Moreover, when communication about sustainability and related actions exists, it can evoke a sense of pride and ownership in the community, which can also benefit the general opinion of people about an organization. In summary, it has the important role to inform, challenge, and inspire.

- **Sustainability Dossier**, contains a brief introduction to sustainability, articles, links to research, media information and links to education

- Expand on the communication forms, e.g. through a sustainability dedicated website that can be linked to social media
- Make available and distribute printed materials such as posters, signs, stand-up displays informing the community about the sustainability activities at LU or inspiring to behave in an environmentally sensible manner
- Establish a Green Office as central administrator, for amongst others collect and distribute information, define the language, images, train people, bridge connection to other departments
- Make use of collective intelligence by crowdsourcing ideas
- Build and use partnerships with other universities, but also within LU, among departments and faculties for example to support each other and increase the sphere of influence
…to coordinate sustainable development, to create a hub to accelerate and incubate sustainability initiatives, to support development of (sustainability) competences of future leaders and improve internal and external sustainability communication, which will improve the overall sustainability and the image of Leiden University.

**Description of a green office (GO)**
- Student-led and staff-supported university department
- Coordinates sustainability related issues
- Central role for sustainability communication
- Typically receives resources from university
- Integrated as an official department
- Has a mandate to manage sustainability
- Students get training & coaching
- Closely collaborates with other university departments

**Why should Leiden University have it?**
- To improve visibility, connectivity and impact of sustainability initiatives
- It resonates with the trends that can be identified of students and youth willing to be engaged for a more sustainable world, which can also be identified within Leiden University. (In the mobility survey conducted in 2014, students indicated that they think sustainability is an important topic: they rated the subject 7.5/10 in terms of personal importance.)
- To coordinate sustainable development of LU.
- GO could provide the missing internal communication platform where researchers and students share questions.

**What does Leiden University already have for it?**
- Broad support amongst students
- Internationally renowned environmental department that can provide guidance
- Sustainable active community with sustainability researchers and student network

**What would Leiden University still need to do?**
- It needs a widely-supported vision, formulated, disseminated and fully supported by the University Board Green Office coordinator
- Communicate with other universities to discuss experiences, successful practices and to avoid the pitfalls other GOs have experienced
- Allocate sufficient resources to it such as a location, human and financial resources
LEIDEN FREEDOM RIDE

... a bike sharing program that connects Leiden University and the city, promoting bicycling as a free transportation means for the LU community.

The Problem: Leiden University Campus is widely spread across different locations! Leiden University has 80 different buildings located in two cities: Leiden and The Hague. The majority of the buildings on campus are located in the city of Leiden, but also within Leiden, the campus is widely spread! Some buildings are found in the city centre and some on LU lack a central transportation system. This is mainly because the majority of students and staff either have their own bike or take the public transport (bus) to arrive to their end destination.

But what happens to those students who do not have a bike and are short on budget to pay for a 1.50 Euro one-way ticket? Well, this student has to walk. And as much as healthy and enjoyable it is to walk, it could be a problem when you have your bag full of heavy books and a terrible deadline coming.

So, let’s illustrate the situation of the walking student, by assuming he/she has to travel from the science faculty at the Einsteinweg to the Student’s front office in Plexus at the Kaiserstraat, see maps to the left.

The Solution:
Save money! Save time! Connect the city and the campus! Create a Leiden community engaged in sustainable transportation by experiencing the Dutch bike culture. Bikes rental points in key location within Leiden University Campus, access to rental bike system by using the LU card.

Beyond the obvious: The Bike Sharing Program: Leiden Freedom Ride project not only eases the transportation of students throughout the campus, but also promotes: sustainable transportation, reduction of CO₂ emission, health, increase of air quality, community engagement, environmental education, possibility of new partnerships, leadership, innovation and strengthening the bounds for future and current alliances between universities; Leiden, Delft, Rotterdam.

Integration: The Bike Sharing Program: Leiden Freedom Ride project integrates several of the key fields proposed as the basic pillars: education, communication, transportation and emissions, buildings, governance!
Singel Park

...Leiden University will be a main player on the realisation of the project ‘Singel Park’ from Leiden municipality.

Description
Since 1659, a 6 km long moat is around Leiden city centre. The canals have been part of the identity of the Leiden city since centuries and now a unique cultural heritage is being created. On the edges of the canals, a green canal is being develop, which will become the Singel Park, for open green urban spaces that combines, nature, sports and culture for residents and visitors of Leiden to enjoy.

Why should Leiden University have it?
- Leiden University is the oldest university in The Netherlands, the history of Leiden University is intrinsically the history of Leiden city. The ‘Singel Park’ is the new iconic project from Leiden municipality and the university could contribute with mayor innovation projects within the park.
- LU could demonstrate its innovative projects and research e.g. an aquaponic system run on renewable energy from hydrolysis could provide food to the university cafeterias and also be a seed nursery for plants of the Hortus Botanicus
- LU could create a living lab and be part of the city, which very soon will attract much media attention and visitors

What does Leiden University already have for it?
- Hortus Botanicus as one of main players for nursery of trees and plants
- Leiden University already has in place the main research pillars to contribute in a unique way to the Singel Park project, such as:
  - Aquaponics Lab – Center of Innovation
  - Circularity – CML
  - Hydrolysis – LIC
  - Genetics, crops and food research - IBL, NBC Naturalis and Hortus Botanicus

What would Leiden University still need to do?
- Create new partnerships with Leiden municipality and the citzanes bottom-up initiative ‘friends of the Singel Park’
- Feasibility study
- Integration between the different research areas: Aquaponics Lab – Center of Innovation, Circularity - CML, Hydrolysis - LIC and Genetics, crops and food research - IBL, NBC Naturalis and Hortus Botanicus.
… first carbon neutral building of Leiden University that integrates sustainability in all of its practices and will thus be the epitome of the university’s sustainability ambitions.

**Description**
- The Beta campus will be the poster child of Leiden University’s sustainability efforts.
- The campus will be completely carbon neutral: (1) use of energy, and thus associated CO₂ emissions will be drastically reduced by technological advancements, smart design and influencing people’s behaviour. (2) CO₂ still associated with the campus’s operations will be compensated by buying Carbon Credits.
- Students and staff will be made aware of these inspiring projects through the digital displays in the campus, photographs on canvas print with an information sheet and QR code – educating people about sustainability and inspiring them to take action.
- Part of the roof of the Beta campus will be used for sustainable energy production
- Green Office will be housed there

**Why should Leiden University have it?**
- LU’s sustainability efforts need to be visible and tangible
- It will help the university communicate its ambitions to (prospective) students and staff, and the increased involvement and awareness of students and staff will benefit future policies and agreements through greater suitability to the wishes and capabilities of students and staff, thus increasing efficiency and efficacy.
- Beta campus project has already been initiated, budgets have been allocated and building has commenced.
- The design of the building already complies with strict standards in terms of environmental impact, which is why the proposed project will be relatively cheap and easy to execute.

**What does Leiden University already have?**
- Developers are aiming for the BREEAM-NL ‘very good’ level, which is a good measure for the environmental impact of a building.
- For all electricity used by Leiden University, guarantees of origin from a hydroelectricity plant are already bought, which will also facilitate a swift transition to a carbon neutral beta campus.

**What would Leiden University still need to do?**
- Other sustainable energy technologies such as small-scale wind turbines can be constructed to power parts of the building
- Carbon Credits have to be purchased from carefully selected projects