Energy Policy Plan 2020-2030: the path for UGent in the energy transition

1. Framework and principles

With the energy policy plan, approved by the BC on 19 March 2009, UGent committed itself to reducing the energy consumption of the patrimony by 20% by 2020 compared to the energy consumption in 1998. Additional energy consumption for the new buildings since 2009 had to be compensated by own renewable energy generation.

This ambitious goal formed a clear framework for the past decade. The UGent management monitored progress via an annual follow-up report and a two-yearly sustainability report, and various policy instruments were developed to achieve the objectives. The most relevant were

- the provision for sustainable measures since 2010, allowing proven savings to be reinvested in sustainable energy projects;
- the provision for renovation since 2010 to which the balances of the maintenance programmes and general budgets of welfare and the environment are added annually in order to expand the renovation budget with additional budget for energy measures;
- The decision to strive for near-zero energy (BEN) buildings and renovations;
- proper integration of energy measures into the building policy (adjustments to the draft directive, checking the investment plan against the energy objectives, etc.);
- the investments in green energy (PV installations, heat pump, etc.);
- the decision to build an additional wind turbine on the Proeftuinstraat campus and to select a project developer who would allow as much direct participation by local residents, students and staff as possible;
- the development of the support base through energy campaigns, Transition UGent, ...

Since 1998, the consumption of fuel and electricity has been closely monitored in energy accounting. **Electricity consumption has** increased by 50% since 1998; electricity bills have increased by 94% (from €3.4m to €6.7m/year) (Figure 1). Compared to the **previous year, the consumption decreased by almost 2%, a turnaround after years of increase.**

The adjusted fuel consumption decreased by 20% since 1998, while the fuel cost increased by 40% (from 2.1 mio to 2.9 mio €/year) (Figure 2). Compared to **2018, actual and adjusted consumption decreased by 3%.**

Since 1998, fuel consumption per m² of building area has decreased by 40% and 56% respectively; electricity consumption per m², on the other hand, increased by 11% (figure 3). The fuel and electricity consumption per UGent employee (staff + student) decreased by 58% and 23% respectively (figure 4).

Since UGent has opted to buy green electricity since mid-2008, CO_2 emissions resulting from fuel and electricity use in the buildings have **been halved** (Figure 5). The European target calls for an additional reduction of 1.5% per year until 2030, and from then on a reduction of 4.6% per year. However, the IPCC calls for faster progress towards CO2 neutrality in order to keep temperature rise below 2°C.

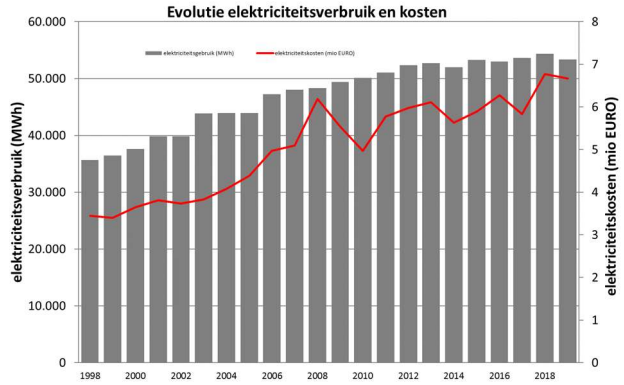


Fig. 1: Electricity consumption and costs from 1998 to 2019

Fig. 2: Fuel consumption and costs from 1998 to 2019

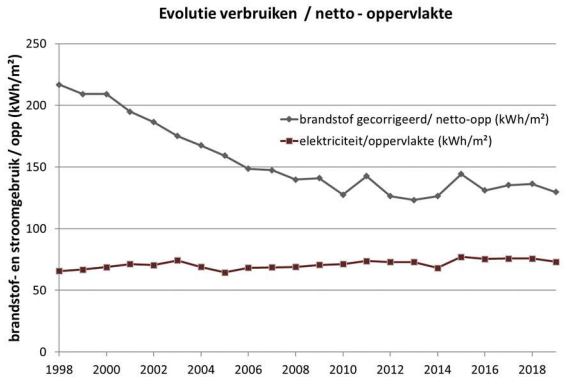


Fig. 3: Energy consumption per m² from 1998 to 2019

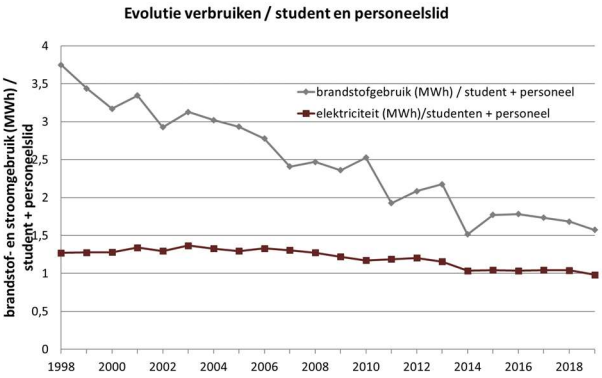


Fig. 4: Energy consumption per UGent employee from 1998 to 2019

The total adjusted energy consumption of 2018 decreased by 18.5% compared to 1998, when the new buildings since 2010 are excluded: UFO, E. Braunschool, S10, Kantienberg, Groeninghe, Mercator A and B, Dunant 2, sports research centre, Veterinary Research Building, Block F of campus Coupure, MRB2, resto Diergeneeskunde, i-Gent and the underground depot of campus Boekentoren.

In addition, the additional consumption of the new buildings (approx. 21,144 MWh) is no longer compensated by the own green energy production (approx. 11,604 MWh). However, UGent did decide to install a 4th wind turbine on the Proeftuinstraat campus.

The figures show that UGent will not reach the 2009 target for energy reduction of the existing patrimony, although it is approaching it. Also the objective to compensate the extra consumption of all new construction projects after 2009 with own produced green energy will not be reached in 2020; probably it will be a few years later because of the decision in 2017 to install a 4th wind turbine on campus Proeftuinstraat.

2. Objective

But 2020 is by no means an end point. Climate change calls for drastic measures. The EU has committed itself, in implementation of the Paris Climate Agreement, to become carbon neutral by 2050. **This means an almost complete transition to renewable energy, a halt to further use of fossil fuels and a very significant reduction in energy demand. Several decisions**

taken now must already take account of this transition, especially in terms of infrastructure that will be in use for decades.

This ambition was made concrete for the next 10 years in an energy policy plan 2020-2030, with the following objectives (BC 28/6/2019):

- to reduce total CO2 emissions from building heating and electricity by an average of 1.5% per year1,
- to reduce energy consumption annually through more efficient use of space and energy (% is determined by master plan 2050 (end of 2020)), and
- to build and renovate fossil-free from now on.

Achieving the target will require investments and measures to bring about a change in behaviour and systems. This should include space and energy efficiency and investments in green energy facilities.

Annually, a state of affairs is given, the actions carried out are explained and the results are assessed. This forms the basis for continuous improvement and adjustment and determines the input for next year's plans.

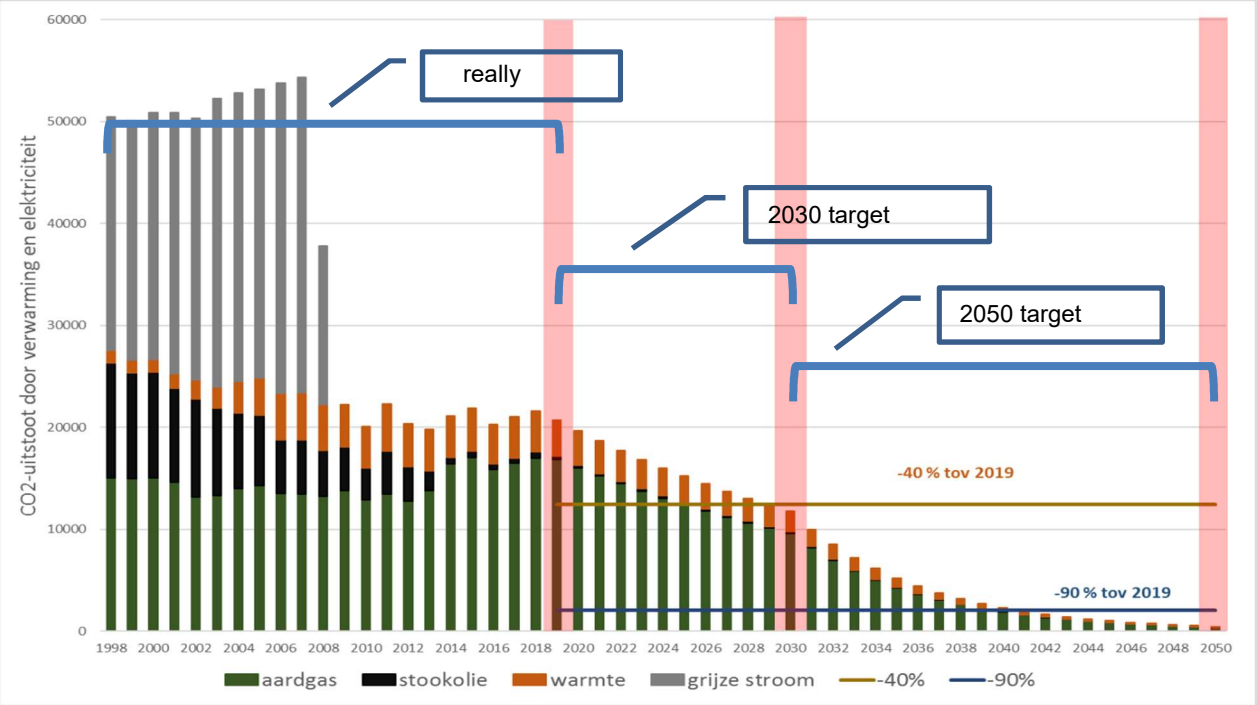


Fig. 5: CO2 emissions from heating and power supply from 1998 to 2019, with the targets for 2030 and 2050

3. Action plan

To achieve the above objectives, an ambitious action plan is needed. This contains study work, investment measures and measures to achieve behavioural and systemic change. It is built around 2 pillars, namely :

- **energy efficiency**
- **investments in green energy**

[1] *If the EU ambition were to be tightened further in the coming years (to bring it more in line with the Paris Climate Agreement), this UGent objective would also have to be adjusted.*

Twelve **leverage actions** are highlighted that have the potential to accelerate the energy policy plan undertaken. These actions can leverage follow-up projects if they receive the necessary policy support and resources. The leverage actions have the advantage that they can be started up in the relatively short term and do not have to wait for results from studies, policy, the market, etc.

Study is also part of the present action plan, because there are still many gaps in knowledge, and social and technological developments are happening very fast. It is important that we move in a clear direction in the coming years and gradually gain insight into the challenges and problems that we will encounter. The lessons learned from the leverage actions can feed into these studies. At the same time, we must ensure that no investments are made during the search process that cause lock-ins or go in the opposite direction.

Finally, reference is made to the **extra financial effort** that will be required. In the course of the next 10 years, a budget will have to be provided for this. Actions for this will also be brought forward.

3.1 Pillar I: space and energy efficiency

Since 1998, the energy consumption of the entire UGent building stock has decreased by barely 2%. Forecasts show that after investment plan 3, energy consumption will increase by 1.5% in 2028 due to a new extension in m². CO2 emissions from energy supply to buildings will be only 2-5% lower than today, due to a switch from natural gas installations to heat pumps.

This analysis shows that a different and more ambitious approach is needed to achieve the objectives of this energy policy plan. In addition to focusing on BEN-buildings and green electricity, far-reaching efforts must be made to:

- Densification and infill of the building stock
- Accelerated reconstruction and renovation
- Careful building management

3.1.1. Densification and infill of the building stock

Problem statement

It goes without saying that the more efficient use of space through densification and infill development leads to a more efficient use of energy per square metre.

This is not a new objective. It is one of the priorities of the real estate policy plan 2019-2028 (approved in November 2015) to realise a compact university with an efficient and economical use of space. After all, reducing the UGent footprint contributes to various goals: cost efficiency, sustainability in various senses and the creation of a close-knit living community.

Thanks to this shared vision, a few first steps have already been taken, such as:

- the introduction of a central auditorium management system
- Developing an "alternative work" concept
- *sharing projects* with third parties such as the realisation of laboratories in collaboration with VIB and research suites in collaboration with ILVO
- the adjustment of the area standard for offices
- the central server infrastructure
- the university-wide expertise centres
- the Directive on the shared use of L3 and A3 facilities

- the plan for core facilities for the Faculty of Medicine and Health Sciences
- the ambition to organise the departments of Organic and Inorganic Chemistry together
- occupancy and utilisation measurements in recent projects and benchmarking with other universities and research institutions
- ...

Despite this ambition, knowledge and good examples**, the surface area increased by 15% from 2013 to 2018** (from 767,132 m² to 880,895 m²), **an increase of 5% in investment plan 3** (to 916,956 m²). Of course, this will also compensate for the growth in staff and student numbers, but occupancy measurements of auditoriums, meeting rooms, lab space, ... very often show under-occupancy and under-use, also in the case of new buildings (office space in the Small Pets building) or recent renovations (Ledeganck building). With the exception of a few examples, the expansion remains tailor-made for the applicant, department- or faculty-specific, bound to a particular campus, etc., despite the DGFB's critical eye. despite the DGFB's critical eye. All too often, we are stuck in a 'pattern', whereby we offer an answer to additional needs by adding buildings and leaving the old buildings untouched.

Drawing up a master plan for the building stock 2050

We have to ask ourselves the following questions: Which campuses do we deploy for the further development of UGent? Do we limit the number of university campuses? Which buildings still have sufficient quality to be renovated? Which buildings do we dispose of? How do we fill in the available space optimally? How can the quality and energy performance of UGent's building stock be improved? How do we transform the entire building stock in the next 30 years to the desired end result: comfortable, energy-neutral, fossil-free, sustainable?

These questions should be examined and result in a master plan for the UGent building stock that should offer a short-, medium- and long-term perspective for densification, renovation and new construction towards 2050.

The master plan must be attuned to the European climate objectives by 2050 and make visible how the transition to a sustainable building stock will be tackled in the coming years. Consequently, the master plan must make the interim objectives more concrete with regard to energy reduction and allow progress towards 2050 to be monitored.

The following concrete measures are proposed:

S1. Elaboration of master plan for building heritage 2050	
Study 	The accessibility, spatial and social quality, compacting capacity, etc., are mapped out at campus level and the potential for evolving into a 'future-proof' campus is estimated.
	The building technical and energy quality, comfort, versatility, accessibility, architectural value ... are inventoried at the building level and the potential to evolve into a 'future proof' building is estimated.
	Budget: Process manager and evaluators (regular operation DGFB).
Determine direction	A vision will be developed (in terms of use, sustainability ambitions, space needs, etc.) in a think tank consisting of various stakeholders (administrators, experts, the City of Ghent, users, policy staff, etc.).
	With the vision in mind, a roadmap will be drawn up. This consists of several scenarios for achieving the 2050 target and formulates, among others, intermediate objectives regarding energy reduction and energy efficiency. In addition, the roadmap defines concrete and phased actions for the period 2020-2030, taking into account the planned construction and renovations as foreseen in investment plan 3.

	Investment plan 3 may be adjusted. The renovation budget is allocated to specific total renovation projects.
	Budget: Process manager (50 man-days), think tank (regular operation), thematic working groups (regular operation).
	Interim targets for energy reduction and energy efficiency allow for a thorough and transparent follow-up and clarify priorities, thereby providing sufficient financial resources.
	By 2050, the entire building stock will have been transformed into the desired end result: comfortable, energy-neutral, fossil-free and sustainable buildings.
Evaluation	Koen Jonckheere went to work as process supervisor and wrote a first vision text 'UGent verbeeldt 2050' (UGent imagines 2050). The plan aims to define clear outlines that can guide policy choices for the next 30 years. The plan should reflect the essence of the university, i.e: - education and research - facilitating and optimising human cooperation - openness to the city and society In addition, three challenges of the 21st century are included: sustainability, (international) mobility and digitality. In addition to working on a widely supported vision text, an architectural and engineering firm was appointed to develop a concrete roadmap for the period 2020-2035, in addition to a principle roadmap for the period 2035-2050. Meanwhile, campus passports and a map atlas were drawn up, in which campuses were assessed in terms of socio-cultural aspects, sustainability, mobility, ecology, energy, circularity, digitality, etc.
Adjustment and planning (proposal)	The investigation is ongoing. However, (stricter) attention is requested for the following 2 aspects: - The level of ambition of the vision text must be sufficiently high, the policy choices must be clear and certain boundaries must be defined. This will prevent lock-ins, where we do not have to bear the consequences of unsustainable choices for decades. - The conclusions drawn from this plan should be useful for adjusting the multi-year budget of the investment plan.

H1. Densification of the Ledeganck campus	
Lever action	Together with the new research building for fac. WE, it is being investigated how this faculty can become denser (Ledeganck, S-buildings, Proeftuin). The focus is on effective densification of the Ledeganck campus, where the buildings have recently been thoroughly renovated. This allows old space- and energy-inefficient buildings to be freed up (of the WE faculty, but possibly also of other faculties), thus making a total renovation, reallocation, demolition, etc. possible.
	Budget: Project leader DGFB, in cooperation with fac. WE and the think tank Masterplan 2050 (regular operation)

	<u>Extra budget for compaction Ledeganck</u> *+ Budget for total renovation of vacant (1st phase in investment plan 3).*
Continued	Vacant buildings can be thoroughly renovated.
	Lessons learned serve as input for similar renovation processes (Technicum-Plateau, Rommelaere-Rectorate-Pand, Ardoyen campus buildings, etc.).
	Budget: Renovation budget in investment plan 3 in 1st phase *- Savings through more efficient use and better utilisation, less space taken up, less electricity used, no investment in similar infrastructure, etc.*
Evaluation	No additional resources or manpower were provided for the densification of the Ledeganck campus.
Adjustment and planning (proposal)	This action point should be included in the exercise considering the release and reallocation of S3, S4 and S12.

<u>Densification and infill steering by users</u>

To further stimulate infrastructure sharing, a number of actions need to gain momentum and be incorporated as fully-fledged policy measures. This already happened for the phasing out of decentralised server rooms and their relocation to the central data infrastructure. Since 2016, a limited group of university-wide expertise centres[2] have been supported with BOF funds. For L3 facilities and animalaria, the draft guideline states that, in principle, such infrastructure will no longer be provided additionally and that activities that require it must take place in the infrastructure already available.

However, more control is needed. Right from the preliminary design phase, work is tailored to specific departments, which makes flexible use impossible. For example, the animal room of MRB2 was custom designed for a department that never took up residence there. In the meantime, it has been rebuilt for the 3rd time.

In order to use specific space and equipment more efficiently, additional supporting measures are therefore needed, such as:

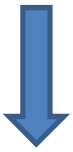
- generic and flexible design, starting from a 'future proof' basic concept per type of activity (chemistry, biosafety, etc.)
- making specific infrastructure accessible to third parties
- making an inventory of the available dedicated infrastructure
- the support for a central management system (manpower, management system, etc.)
- Elaboration of steering / accountability mechanisms

The following concrete measures are proposed:

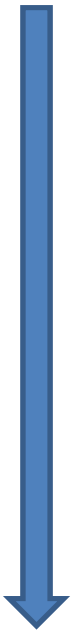
S2. Development of future proof basic concepts for different types of labs	
Study 	Instead of customised designs for the user, basic concepts are worked out and laid down for the various types of laboratory. These concepts are designed according to a number of standards for all buildings (carcass, finishing, techniques), allowing the building to be adapted and future-proof. Maintenance can be performed in the same uniform and efficient manner for all buildings. If additional customisation is required for certain research, this

[2] https://www.ugent.be/en/research/research-ugent/researchdirectory/centres-of-expertise.pdf/

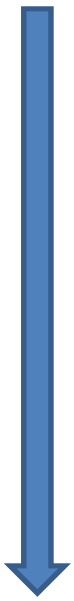
	can be considered later in the planning process (design phase). In order to limit this customisation to what is strictly necessary, departments must themselves bear the costs of these specific requirements, for example, or they are allocated a fixed budget that they are free to spend.
	Budget: Manpower (regular operation DGFB, energy policy working group, lab community).
Anchoring	Labs are designed to be sustainable and modular. Customisation is limited to the most necessary.
	Budget: Savings through more efficient use and better utilisation, less space taken up, less electricity used, no investment in similar infrastructure, etc.
Evaluation	An analysis was made with DGFB of examples where design agencies have worked with the concept of 'flexible and generic design' in recent UGent projects and in some external examples: what is strong, what is not? what is customised, what is generic? what is a good ratio? After all, different design agencies each came up with their own solutions.
Adjustment and planning (proposal)	Based on this exercise, basic modules and guidelines will now be developed for various major types of activities. This can then be included in the design guideline. Consideration should also be given to optimising the design process in terms of participation. For example, is it an idea to provide a sketch design and only then to enter into a dialogue with the future building users? Should a kind of faculty 'scientific committee', which can assess needs more accurately, be involved in the assessment of space questions? This thought exercise will be included in the steering group 'thinking about space together'.

S3. Information build-up on available expertise, infrastructure and devices	
Study 	The available specific expertise, infrastructure and equipment at UGent will be inventoried as part of the UGent research information system GISMO (data on infrastructure should be delivered to the Flemish Research Portal FRIS by the end of 2021).
	Budget: Budget as part of GISMO (regular operation DICT and DOZA).
Anchoring	Knowledge of available expertise, infrastructure and devices will lead to more voluntary sharing.
	If not: Work out control/response mechanisms to increase shared use of (energy-consuming) infrastructure (cf. data centres).
	Budget: Savings through more efficient use and better utilisation, less space taken up, less electricity used, no investment in similar infrastructure, etc.
Evaluation	The stocktaking is ongoing.
Adjustment and planning (proposal)	By the end of 2021, the inventory will be completed and it will be transferred to the Flemish Research Portal FRIS.

H2. The 'core facilities' roll out further

Lever action 	One of the policy priorities of the GE faculty is the installation of various core facilities: core infinity, core animalarium, core flow cytometry, core logistic support, etc. This allows infrastructure, material and/or services to be shared across departments and research groups, possibly even externally. In a first phase, the faculty made funds available for the appointment of a 'core facility manager'. This fits in with the policy that resources released for ATP are mainly used for cross-departmental or faculty-wide initiatives. After all, the provision of a core stands or falls with the availability of staff. When Block B comes into use, the faculty asks the departments involved to use ATP for the benefit of the cores. A firm foundation has already been laid for the latter, as the faculty has been prioritising the use of personnel points released by ATP for cross-departmental and cross-research initiatives for a number of years. DGFB, DFIN, DOZA and DICT assist in the design and development of tools for management, cost ventilation, staff allocation, etc.
	Budget: Faculty of GE releases resources for a core facility manager and allocates ATP points from departments to the core facilities; DFIN and DICT develop management tools (regular resources DFIN and project work DICT) *- Savings through more efficient use and better utilisation, less space taken up, less electricity used, no investment in similar infrastructure, etc.*
Continued	Other faculties/research groups, for which a new building/renovation is planned, will be supported in elaborating and implementing the concept of core facilities (faculty BW, department WE06 and WE07 in faculty WE). As a transitional step, a lab manager can be appointed who has an overview of the available infrastructure and lab activities at the faculty and who can judge whether co-use is possible in the case of new questions.
	Lessons learned serve as input for the design guideline.
	The surface area standard for laboratories is refined and applied as standard (deviations are possible after justification).
	Budget: Each faculty releases funds for the appointment of a 'core facility manager' and allocates ATP from departments to core facilities. *Support in setting up management systems, organisation and setting up the infrastructure, ... (regular operation DGFB, DICT, DFIN, DOZA)* *- Savings through more efficient use and better utilisation, less space taken up, less electricity used, no investment in similar infrastructure, etc.*
Evaluation	The first core facilities (COREs Flow cytometry and Infinity (preclinical imaging) in the Faculty of Medicine and Health Sciences) are now operational. The first reports of the pilot core facilities still showed a lot of residual capacity, so the plans for a new investment could be put on hold. The Lab Community developed a framework to facilitate the introduction of a core facility (optimisation of the management system (reservation, cost ventilation, etc.), provisioning, etc.). In addition, the scheduling of auditoriums was optimised, allowing them to be used more efficiently, and a clear vision and guidelines were formulated on the cross-faculty use of contained spaces for biotechnological activities and animalaria.
Adjustment and	For the time being, the further roll-out of the core facilities will only be done with "the willings".

planning (proposal)	In the case of new infrastructure, it must be examined how this concept can be enforced more. The framework developed by the Lab Community for this purpose should make this easier to manage.

H3. Shared large lab spaces for fac. WE, BW, FW a.o.	
Lever action 	The practical rooms of the faculties WE, BW and FW were inventoried and their use was mapped. Several of these rooms are underutilised and underused. Shared and more efficient use is possible, provided that the timetables are harmonised and that there is good and reliable management. In the new building for the FW and GE faculties, a multi-purpose practical room will be set up which can be used for all FW faculty chemistry practicals with large student groups. This will free up the space- and energy-inefficient 'temporary practicals' building on the Pharmacy campus for demolition.
	Budget: Additional budget for new Pharmacy building to enable shared use (approx. EUR 100,000) *+ Support in management, scheduling, ... (regular operation DGFB, DICT, DFIN).*
	With the construction of a new research building for the fac. WE, the renovation of the education infrastructure for chemistry must also be considered. This should also include the demand for space from other scientific bachelor's programmes (faculty BW, EA, FW, GE, ...), so that a 'central teaching lab' for chemistry can be created. In this way, the old practical labs in Block B on Coupure Campus can be abandoned, among other things.
	Budget: Support for management, scheduling, ... (regular operation DGFB, DICT, DFIN).
Continued	Other faculties and research groups, for which a new building or renovation is planned, will be guided to elaborate and implement this concept as well.
	Lessons learned serve as input for the design guideline.
	Budget: Management support, scheduling, etc. (regular operation DGFB, DICT, DFIN) *savings through more efficient use and better utilisation, less space taken up, less electricity used, no investment in similar infrastructure, etc.*
Evaluation	The programme for the new Pharmacy building has been expanded so that it can be used for all major practicals for the FW faculty and also for the GE faculty.
Adjustment and planning (proposal)	A thought exercise is being launched to set up a multi-purpose chemistry lab that can be shared and efficiently used by all the science bachelor's programmes. This requires an alignment of timetables and good and reliable management.

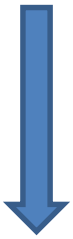
Sensitising and empowering

The construction and energy costs are borne centrally at UGent. As a result, users are not encouraged to use space and energy efficiently. Energy campaigns and awareness-raising projects have been working on this for 10 years.

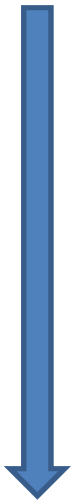
There are many examples that show this to be insufficient. Climate chambers are (half) empty, L3 facilities are not used for the high-risk activities for which they were designed, needs are overestimated, ...

Raising awareness is a good first step, but if this is insufficiently effective, the step towards accountability must be taken, e.g. by charging space usage to the users or by charging the energy cost of specific energy-guzzling infrastructure and appliances. In this way, an incentive can be created to use space (and energy) sparingly. A system of accountability could limit the continuous demand for additional space and stimulate the joint use of the available space.

The following concrete measures are proposed:

H4. Common -80°C freezers for long term storage	
Lever action 	Bioresource centre Ghent (Health, innovation and research institute, campus UZGent) provides 45 -80°C freezers and 6 liquid nitrogen vessels (Isothermal Freezers CBS, 35000 cryovials/barrel) for the storage of biological agents. The Bioresource centre Ghent is the central contact point for biobanks at U(Z)Gent, with a coordinating function and a central management system (with cost ventilation). There is still a lot of unused space, as this is little known and departments can freely place -80°C freezers. However, one -80°C freezer consumes 2500 to 3500 kWh annually and a lot of biological material remains untouched (and in some cases superfluous) in the freezer for many years, which may not be in conformity with the stricter biobank legislation. There are an estimated 130 -80°C freezers at UGent, 9 -150°C freezers and 1 -180°C freezer. In addition to the advantage of saving energy, the Bioresource centre Ghent has back-up freezers and the Biobank legislation has recently been tightened up, which means that stricter requirements are being imposed on biobanks (more safety requirements, audits by the government, back-up plans and emergency plans, etc.). These matters are better organised in a central infrastructure. To encourage departments to use this infrastructure for long-term storage of biological samples, they can receive a one-off payment for the electricity costs saved (cf. pilot project 'thinking differently about space', ca. EUR 1,000) per -80°C freezer that is taken out of use.
	Budget: Financial incentives (regular operation DGFB) *- Savings by decommissioning -80°C freezers.*
Continued	Departments are encouraged to provide long-term storage in shared storage facilities (in the first phase on the UZGent campus).
	If this has too little effect: develop steering/response mechanisms to increase the shared use of energy-consuming infrastructure (cf. data centres): e.g. EUR 500/year per -80°C freezer put into operation.
	Budget: Savings through more efficient use and better utilisation, less space taken up, less electricity used, no investment in similar infrastructure, etc.
Evaluation	Information sessions and an organised site visit have not led to an increase in the use of the Bioresource Center. Additional -80°C freezers are still being installed.
Adjustment and	A new communication was sent out, informing about the new Biobank legislation and the advantages of the Bioresource Center and stating that

planning (proposal)	counters will be placed on all -80°C freezers to make the costs transparent, and possibly to calculate them in a next phase.

S4. Optimising strategy around economical use of space	
Study 	In fac. RE and WE, an awareness-raising project 'thinking about space together' is underway to reflect on the economical use of space. In the fac. WE, proposals were worked out in workshops to use space more efficiently and to give up superfluous space. In total, 2000 m² of useful space was involved, which can be put out of use (comparable to the total area of Rectorate 2).
	Working out the next steps, taking into account the following questions: - How to deal with this disused but fragmented space for the WE faculty (see also leverage action 'densification of campus Ledeganck')? - How to deal with faculties/departments that do not wish to participate? - Is further guidance needed? The fac. WE would save 2000 m², while the faculty has 5000 m² too much on the basis of the surface study.
	Budget: Financial incentives (regular operation DGFB) *- Savings through reduced maintenance costs, reduced electricity consumption, ...*
Continued	If it is successful enough, the pilot project can be rolled out further in the other faculties.
	If the pilot project leads to insufficient results, instruments must be developed to steer more forcefully, such as financially charging for the use of space.
	Budget: Savings through more efficient use and better utilisation, less space taken up, less electricity used, no investment in similar infrastructure, etc.
Evaluation	The evaluation report of the project 'thinking together about space' showed that more is possible and more is needed. An exercise in thinking about the responsibility for the use of space was started.
Adjustment and planning (proposal)	The Corona crisis is forcing us to deal with space differently. In thinking about this, a number of boundaries must be guarded: limited budgets and urgency to preserve remaining open space and drastically reduce energy consumption and CO2 emissions. These limits have already been recognised in the energy policy plan, the real estate policy plan, the green and biodiversity plan, etc. Consequently, more emphasis must be placed on a different organisation and on behavioural changes than on massively providing more m². The reflection on responsibilisation of space use continues.

3.1.2 Accelerated (re)construction and renovation

Problem statement

UGent strives for near-zero energy buildings (BEN) for new constructions and total renovations and has included numerous energy measures in its design guidelines. The new restaurant on the Merelbeke campus was built according to the BEN principle; in the meantime, the

restaurant has been in use for 3 years without any comfort problems. BEN is also being sought for the renovation of Block I and part of Block II of the Technicum, the renovation of Dunant 1 and Sint-Pietersnieuwstraat 51, the extension of De Brug, the new practical building on the Pharmacy campus and the new Block B on the UZ campus. **Given the size of UGent's building stock, we are only at the beginning. Moreover, the step towards fossil-free buildings must now be taken.**
If all buildings with a construction or renovation year older than 2000 and a construction or renovation year older than 1990 are to be brought up to modern standards, an additional EUR 600 million and EUR 500 million respectively are needed.

In view of this slow pace and underfunding, it is proposed that new building and renovation projects already be carried out in such a way that they are '2050-proof', i.e. no longer needing fossil fuel. After all, the buildings tackled now will still be standing in 2050. If the transition has to take place in intermediate steps, for example by temporarily installing CHPs or by feeding a heat network with natural gas, this must be thoroughly justified and the commitment to switching to fossil-free energy in the long term must be clear.

In addition, the master plan's step-by-step plan should make it clear in one or two years' time how the entire building stock can become BEN and fossil-free by 2050. This will mean an acceleration that will require a great deal of additional funding. First suggestions of possible financing channels are given in section 2.4.

Stricter energy requirements

Many energy measures were included in the draft directive. These are to be tightened up for new construction and major renovation projects.

The following concrete measures are proposed:

S5. Tightening up energy measures in the draft directive	
Study	Technological changes are rapid. Decisive developments are often taking place, for example, in the potential of smart grid, light as a service, circular materials. Such developments should be monitored in order to use them - if applicable - to reduce the energy demand of university activities.
	Budget: Fee for sustainable measures and renovation guideline.
Anchoring	New energy-saving measures will be included in design guidelines, making this a part of all construction projects.
	Budget: Reflected in investment plan 3 and future investment plans.
Evaluation	A new version of the design guideline was prepared, in which additional guidelines were set towards fossil-free building and renovation. In several places, aspects of GRO, the Flemish Government's guide to sustainable building, are also integrated.
Adjustment and planning (proposal)	The draft guideline is submitted to the BC for approval and the guidelines are applied to the best of our ability.

Total renovations

Depending on the capacity, combustion installations must be renewed every 15 (< 50kW) to 35 (> 600 kW) years. If this has to be done in buildings that have not been insulated to current standards, that do not yet have low temperature circuits and where the heat emitters have not

yet been replaced (traditional heating systems), then a high heating regime remains necessary (80/60°C). There are no interesting sustainable alternatives for this.

Therefore, the focus should be on total renovation. A recent good example of this is building S2 on Sterre campus, where a hybrid system (heat pump and gas boilers) can now be chosen, since the building underwent a total renovation a few years ago. A bad example is building S9, where the combustion installation urgently needs to be tackled, but where a gas condensing boiler has to be chosen because the building was not insulated beforehand.

The following concrete measures are proposed:

H5. Total renovations in investment plan 3	
Lever action 	In investment plan 3, EUR 100,000,000 was reserved for replacement investments. This budget should be sufficiently safeguarded for total renovations (proposal: EUR 60,000,000). Depending on the results of the master plan for buildings-patrimony 2050, some buildings will be brought forward.
	Budget: EUR 60,000,000 (provided for in investment plan 3).
Continued	The total renovation will be carried out according to the BEN principle, which means that when the heating infrastructure is replaced in the future, sustainable, fossil-free alternatives can be chosen.
	All buildings renovated from 2020 onwards will be equipped so that they no longer need fossil fuels for heating.
	Budget: Reflected in future investment plans.
Evaluation	No funds have yet been allocated to specific total renovations.
Adjustment and planning (proposal)	The total renovations of Rommelaere, Aula and Korte Meer have already been decided. The conclusions from the study 'UGent verbeeldt 2050' (UGent imagines 2050) should be useful to identify some additional total renovations (see S1).

H6. Additional total renovations in accordance with roadmap of master plan	
Lever action 	The roadmap that translates the vision of the master plan into implementation will propose concrete and phased construction and renovation projects for the period 2020-2030. This will presumably be much more ambitious than the steps currently planned in Investment Plan 3 if we are to achieve the 2050 targets.
	Budget: Additional budget (not yet budgeted).
Continued	By 2050, the entire building stock will have been transformed into the desired end result: comfortable, energy-neutral, fossil-free and sustainable buildings.
	Budget: Reflected in future investment plans.
Evaluation	There was no additional funding from the Flemish Government.
Adjustment and planning (proposal)	The conclusions from the study 'UGent verbeeldt 2050' (UGent imagines 2050) must be usable to adjust the multi-year budget of the investment plan (see S1).

3.1.3 Careful building management

Problem statement

Good and proactive building management helps to find and realise energy saving opportunities and to monitor their success. Since the Technical Bureau of DGFB does not have enough manpower to fully include this in their tasks, it was integrated into the maintenance company's assignment for a number of years. They were asked to make proposals to reduce energy consumption, otherwise a fine would follow. However, this approach does not work. The maintenance company does not take a proactive approach and accepts the fine. The management of the buildings is inadequate: heating systems are not optimally adjusted, there is not enough time for energy audits, etc. The contract still runs until 2022, but it cannot be extended under the same conditions.

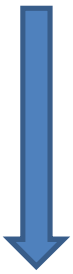
It was also found that new high-tech buildings and the many new installations (rainwater recovery systems, heat pumps, solar boilers, presence detectors, etc.) require much more attention. The follow-up of the engineering offices is minimal after provisional delivery and the focus of the building managers is mainly on proper functional operation. **Most attention is paid to eliminating the (identified) teething problems, but this does not yet mean that the installations are working optimally and that the energy performance initially promised is being achieved.**

Management of energy systems

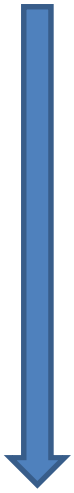
Once a building or an installation is in use, many parameters must be closely monitored. After all, the building will be put into use step by step and the user profile will change over time, e.g. due to shifts in services, functions, etc. Installations must therefore be continuously adjusted and adapted to a (changing) user profile and the building's users. This makes it possible to save energy while creating a comfortable and healthy indoor climate.

One energy manager is far from sufficient to proactively monitor and optimise building management systems. However, there is still a lot of low-hanging fruit. 0.5% savings on an annual basis means EUR 55,000 less expenditure.

The following concrete measure is proposed:

H7. Establishment of energy cell	
Lever action 	In the energy cell of the Technical Bureau, at least 2 energy managers are active, with the task of: - Proactively monitor and update building management systems. - Conduct and follow up energy audits. - Set up an energy working group of experts, users and authorities in the 5 most consuming buildings (e.g. VIB-UGent building). - Contact point for possible energy-saving measures throughout the patrimony.
	Budget: 1 additional FTE (in addition to the one already available)
Continued	Sufficient time is spent on building management.
	Budget: Savings through more efficient use.
Evaluation	No funds were provided for an additional employee or manpower shift.

Adjustment and planning (proposal)	An additional employee will be appointed to proactively monitor the building management systems. Since this person will soon be able to pay for himself, he can be paid with funds from the provision for sustainable measures.

H8. Aftercare	
Lever action 	The iGent building on the Ardoyen campus of Tech Lane Ghent Science Park was inaugurated in 2015. The building design is strongly focused on sustainability and efficient use of space, using the latest technologies. The building has a central building management system. Now that the building has been in use for several years, a review of the energy technologies is appropriate. Are the technological systems working optimally and energy-efficiently in accordance with the promised energy performance? Is adjustment needed? Is the building management sufficient or does it need better monitoring? A 'commissioning team' of academics, students and policy staff within UGent with expertise and affinity in building management, construction and usage processes is appointed to investigate this. Based on the findings, energy systems can be optimised and lessons can be drawn for the general building management of UGent (see also "UGent as a living lab for energy research").
	Budget: EUR 75,000 (provision for sustainable measures).
Continued	There is an effective and integrated strategy on aftercare and building management for the entire UGent building stock.
	Budget: Savings through more efficient use.
Evaluation	Aftercare in iGhent was included in the covenant of the fac. EA in the framework of the UBKs. The assignment holder Arnold Janssens will support this action point. After completion, the building systems of the resto Veterinary Medicine will be examined by a research company to evaluate the operation and, if necessary, to make adjustments, now that the building is in use.
Adjustment and planning (proposal)	Aftercare will also be applied after the completion of the Dunant 1 renovation project and future projects.

3.2 Pillar II: Renewable Energy

The purchased electricity consists of purchased green power (78%), electricity generated by three wind turbines on campus Proefhoeve (18%), electricity generated by cogeneration installations on campus Coupure and campus Ledeganck (3%) and solar panels (0.7%).

The environmental permit application for the construction of a wind turbine on Campus Proeftuin will be submitted in mid-2020.

In total, UGent derives about half of its energy demand from green energy, mainly through the purchase of green electricity. In order to further increase this share, strong efforts need to be made:

- Green heat
  Green own electricity production

3.2.1 Green heat

Problem statement

The buildings are mainly heated by natural gas (76%), heat from the Luminus heat network (16%) and fuel oil (2%). **Heating via heat pumps (0.3%), CHP (3.6%) and biomass (0.3%) is still minimal. However, this is the change that will have to be made in the coming years.**

Disconnection of fossil energy

Research is needed into how buildings, and by extension campuses, can be heated without fossil fuels. This is already happening in iGhent, where heat for building heating is recovered from the data centre. But further rollout will require a lot of technological research and new methods to implement the technological solutions. What heat sources are available in the vicinity? What is the operational reliability of new technologies? What is the renovation rate to go fossil-free? When and with which budget will the investment 'outside the contours' of the project be made?

The following concrete measures can contribute to this:

H9. '2050-proof' renovations and new buildings	
Lever action	In all new construction projects and total renovations, sustainable energy sources are resolutely chosen instead of fossil fuels, or prepared accordingly. In the coming years, this will include Block B on the UZGent campus, the new buildings on the Proeftuinstraat campus, the new research building on the Sterre campus, the new homes and a number of total renovations.
	For the new S11 research building, circular materials are chosen wherever possible.
	Budget: Fee for sustainable measures *+ Additional budget (not yet budgeted).*
Continued	The investment plan grows into an inclusive story, where the extra efforts needed for the provision of renewable energy sources are included in the project budget.
	For example, investments are being made in a heat network.
	Budget: Reflected in future investment plans
Evaluation	Fossil-free construction and renovation have meanwhile been included in the design guideline. All new building and renovation projects (Block B at the UZGent campus, the new building at the Proeftuinstraat campus, the new research building at

	the Sterre campus and the new homes) were aligned with this. Heat pumps were always chosen.
Adjustment and planning (proposal)	This will be continued.

S6. Study of energy transition to fossil-free campuses	
Study	An energy transition plan is being drawn up for the Sterre campus to evolve into a fossil-free campus by 2050. This transition plan consists of several scenarios to achieve this long-term goal. In addition, the energy transition plan defines a concrete and phased action plan for the period 2020-2030, taking into account the planned construction works and renovations during that period.
	A similar study is being drawn up for Campus Proeftuin, Pharmacy and Merelbeke.
	Budget: Fee for sustainable measures (EUR 30,000)
Anchoring	Similar studies are being drawn up for the other campuses.
	Budget: Reflected in investment plan 3 and future investment plans
Evaluation	Energy transition studies are underway for the Sterre, Proeftuin, UZ Gent, Kortrijk and Ostend Science Park campuses to examine how the campuses can be disconnected from fossil energy and what adjustments are needed for planned investment projects.
Adjustment and planning (proposal)	These studies are being further refined. In addition, studies are being launched for the Merelbeke and Aula-Korte Meer campuses.

H10. Switch to fossil-free energy supply for Sterre campus	
Lever action	Align the planned new building and renovation projects from investment plan 3 of the Sterre campus with the energy transition plan.
	The cooling machines in the S10 data centre are due for replacement. By opting for a new generation of cooling machines and a modified hydraulic approach, the low-temperature heat can be recovered via water/water heat pumps in nearby (well-insulated) buildings. In the longer term, a larger share of energy could be distributed in a similar way by means of a heat network. A study of this is recommended.
	Budget: Fee for sustainable measures + extra budget (not yet budgeted)
Continued	Similar operations for other projects on other campuses (Living Labs, Pharmacy) included in investment plan 3 ff.
	Budget: Reflected in investment plan 3 and future investment plans
Evaluation	The energy transition study of Sterre campus provided proposals for demolition, renovation, new construction, provision of own electricity and construction of the heat and cold network, with a timeline in a fast, medium and slow scenario.

	In the meantime, two of the three cooling machines in data centre S10 have been replaced by new generation cooling machines. Research is now being carried out into how the energy can best be recovered and how the hydraulic distribution can be optimised. In the proposed scenarios for the heat network of Sterre campus, part of the heat is supplied by the residual heat of the S10 data centre.
Adjustment and planning (proposal)	The study clearly showed that a start can only be made on constructing a heat network on the campus if a sufficient number of buildings can be supplied with low-temperature heating. The following must happen: - Matching the new S11 building project to the proposed plans; - Preparation of a renovation (S3, S4, S8, S9, S12) and demolition plan (zone between S5 and S11 for construction of BEO field).

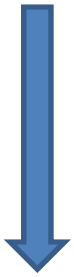
3.2.2 Green in-house electricity production

The consumed electricity consists of purchased green electricity (79%), electricity generated by three wind turbines on campus Proefhoeve (18%), electricity generated by CHPs on campus Coupure and campus Ledeganck (3%) and solar panels (0.34%).

In order to increase the share of its own green energy, UGent agreed to install an extra wind turbine on the Proeftuin campus and to choose a project developer that allows direct participation by local residents, students and staff members as much as possible.

The share of solar energy increased due to larger solar panel installations on the facade of the i-Gent building, the installation on the roof of S8 and the GUSB, in addition to smaller ones on the roofs of Petrochemie, PPW, Heidestraat, homes Astrid and Canterbury and Small Pets. Due to a lack of manpower, this cannot be done any faster.

The following concrete measures are proposed:

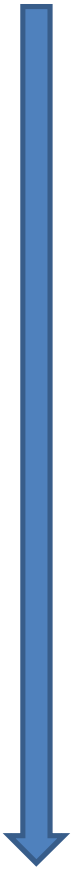
H11. Accelerating the use of rooftops for electricity production	
Lever action 	By means of a tender, a third party financier can be sought who installs as many PV installations as possible on UGent roofs and operates them. It can be stated that UGent wants to buy the power at a reduced rate. It can also be asked to raise as much money as possible from UGent and its stakeholders (staff and students). It can also be decided to provide its own manpower and resources for this purpose.
	Budget: Nothing if third-party funding is chosen. If UGent wishes to finance this roll-out itself, then 0.5 FTE is needed.
Evaluation	Since no new employee was appointed, a collaboration was set up with the Vlaams Energiebedrijf. Within the law on government contracts, they act as a central purchasing body, which exempts UGent from having to organise a tendering procedure itself. See BC memo 'Accelerating and increasing own electricity production'.
Adjustment and planning (proposal)	In cooperation with VEB, PV installations are initially planned for Sterre campus and Veterinary Medicine campus.

4. Create support, raise awareness, inform

The transition to a sustainable energy system based on renewable energy sources promises to be quite a challenge, and one that will not tolerate any more delays. At the same time, there are many uncertainties, familiar systems and practices will have to change and complex, risky and expensive interventions have to be budgeted for in the already very tight budget. So there is a need for strong support for making the energy transition a top priority.

Administrators must be convinced of the necessity. Staff members and students must feel involved in the energy policy of UGent and be convinced of the importance of energy efficiency, know how to use BEN-buildings, understand why infrastructure needs to be shared and needs to be correctly assessed, be stimulated to take on commitments that go beyond their comfort zone, etc. Annual energy sensitisation campaigns, energy audits, the think tank Transitie UGent, etc. are a response to this. When these positive stimuli do not produce the necessary results, the UGent administration has to take the step towards control and accountability.

The following concrete measures are proposed:

H12. Joining forces and strengthening support base	
Lever action 	The following initiatives have been running for years and will be continued and strengthened: ○ Working Group on Energy Policy: a network of policy officers (DGFB, DICT, Environment), energy experts and interested parties. They shape the energy policy plan, follow up the action plan, give advice and develop policy instruments and experiments. ○ Transitie UGent: an open renewal network of committed students and staff, academics and policy makers, who meet about four times a year and address various sustainability themes. They act as a sounding board group and help create support for the further rollout and integration into the energy policy. ○ Faculty environmental committees: a group of staff members who monitor environmental and climate issues related to their faculty. They act as a sounding board group and help create support among the building users. ○ Campaigns on energy sensitisation in the winter period, efficient use of space, global climate objectives, etc. ○ Broad communication about the objectives and policy choices and the results achieved. ○ General point of contact for remarks, suggestions, initiatives, ... concerning energy policy (energie@ugent.be, milieu@ugent.be, duurzaam@ugent.be) .
	Budget: Included in the regular resources of the Environment Department, DGFB, etc.
Continued	A widely supported Energy Policy Plan 2020-2030 and effective implementation of the proposed actions.
Evaluation	The new energy policy plan, with its objectives and policy choices, was discussed in general UGent communication and some specific media

	(Schamper, Green Office newsletter, etc.) and in faculty environmental committees and other working groups on the environment and sustainability. Several action points from the plan were also included in covenants of faculties and managements as part of the university-wide policy choice on sustainability. Arnold Janssens was appointed as assignment holder to support this. The enlarged energy policy working group remains active and enthusiastic, also for the further elaboration of the energy policy plan. The plan served as inspiration for other higher education institutions. Consultations were also started with the City of Ghent to align it with their climate plan.
Adjustment and planning (proposal)	Efforts are continuing.

5. Research

The energy transition still requires a great deal of technical, process and social innovation. There are still many knowledge gaps and challenges for knowledge institutions to achieve a sustainable and energy-neutral building heritage. As a university, we can act as a living lab in research projects.

The following collaborations have already been set up:

The Interreg project BISEPS[3] looks for synergies in terms of energy exchange on campuses and between companies, e.g. through recuperation and exchange of residual heat or exchange of electrical energy. In the project, a simulation tool is developed that maps out which energy synergies are possible on business campuses, which technological and economic barriers exist and what the financial benefits could be. The simulation tool is applied to campus A of Tech Lane Ghent Science Park and the Ostend campus.
The Interreg project ROLECS[4] looks at streamlining energy tariffs, legislation and technical aspects to enable Local Energy Communities (LEC). These are locally defined zones in which participants themselves take some of the responsibility for energy production and balancing. It is being investigated whether campus A of Tech Lane Ghent Science Park and the Ostend campus could be suitable for implementing a LEC.
The IDLab research group is housed in the iGent building and has experienced that the temperature in the building can vary significantly between offices and is not always ideal (often too warm). Also, a number of systems are not always used or controlled optimally (e.g. control of sun blinds and windows). Given IDLab's strong expertise in data analysis and sensor communication, and the interest in using iGent as a living lab for testing new developments in realistic conditions, an internal trajectory has been set up in which a number of analyses will be carried out on the data available from iGent's building management system. Afterwards, additional sensors can be installed to capture additional data (e.g. on presence of users or air quality) and an interaction with the users can be set up. The aim is to achieve optimum comfort with minimum energy consumption (see also lever action "aftercare").

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In the course of the Engineer-Architect programme, a PhD student works on the design of heat networks of the latest generation (with heat-cold exchange).
A thesis student from the Engineering Architecture programme is conducting exploratory analyses on the monitoring data of the Charles Vandenhove Pavilion, focusing on indoor climate.
In the course of the Engineer-Architect programme, a student worked on the "energy performance gap", i.e. the difference between the promised energy savings before and the actual energy savings after a renovation. More specifically, they looked at building S5 and home Boudewijn. In a follow-up project, buildings will be further monitored in order to investigate what the ideal monitoring detail is, in function of costs/benefits (see also lever action "aftercare").
At the city academy, students investigated the possible reconversion of the UGent building stock[5] from the 60s and 70s (poorly insulated buildings with outdated energy techniques). The renovation task is not only a matter of infrastructure and technology, but is also a challenging management issue (cooperation around heat networks, around district parking, around integrated mobility, etc.) (see also lever action "extra total renovations in accordance with master plan").
A master's thesis was written by the Department of Architecture and Urban Planning in which development scenarios for a transition to a sustainable university campus Sterre will be elaborated.
IMEC is working on the research project 'Hybrid AI for optimal building management' (2020-2022) where the iGent tower is one of the studied cases.
In the course of the Engineer-Architect programme, a special issue was written (optional course in which 10 to 15 Master's students participate in research) on the subject of 'Roadmap towards an energy efficient FEA campus Ardoyen'. The results can provide insights for the energy policy plan.

S8. Developing a high-performance platform for socially relevant research	
Study	In the first instance, this could involve the further development of the City Academy into a 'collaboratorium' in which students from different disciplines, professors, policy makers, businesses and civil society organisations share and develop knowledge about social and ecological challenges. It is a place where people think together about problem definitions and solutions, about future visions and strategies, about experiments and scaling up.
	Budget: Extra manpower for coordination (possibly as part of university-wide policy choice for sustainability or as part of sustainability policy, not yet budgeted)
Anchoring	Policy officers can further shape their policies in interaction with teachers, students and researchers.
Evaluation	An exploratory study was conducted together with several actors (Green Office Ghent, Centre for Sustainable Development, Durf ondernemen, Wetenschapswinkel, ...). Because of different logics for thesis research in the faculties, the education directors did not go along with the proposal.
Adjustment and	Together with the contract holder Thomas Block, the track will be further investigated.

5

planning (proposal)	

6. Funding

Sustainable building and the transition to a fossil-free building stock must become an **inclusive story**. The costs associated with this must be integrated into an investment plan, in a building project, etc. However, investment plan 3 does not yet go this far. **The measures which must be taken to build and renovate according to the BEN-principles are anchored, but an extra budget for e.g. a connection to a heat network, a BEO field, ... is not yet foreseen.** In order to finance this in the meantime, the following budgets were/can be used.

Commission sustainable measures:

The 'provision for sustainable measures' is included in the investment plan. This provision is supplemented annually by proven savings. In the next budget, it will be proposed to transfer the proven savings of the previous years, i.e. **EUR 741,873**, from division I to division II. For section III, the proven savings in 2019 amounted to **EUR 244,129**.

Commission renovation directive:

There is also a provision for projects carried out within the framework of the renovation directive. The balances of the maintenance programmes and general budgets for welfare and the environment are added annually to the provision for projects carried out within the framework of the renovation directive. For 2019, **an** additional EUR **61,942.44 will** be added to the provision.

Grants:

- Call green heat, residual heat, heat grids and biomethane: Those who invest in new projects of green heat, residual heat, heat grids or biomethane production can apply for support (30% of the investment) during the annual call for projects (https://www.energiesparen.be/call-groene-warmte. In the further development of the heat networks on the Sterre campus and the Kortrijk campus, these subsidy possibilities will be thoroughly examined.
- Certificate system: Certain installations are entitled to green power and/or CHP certificates. **EUR 26,199 and EUR 44,826** were received for the PV plants and CHP respectively in 2019.
- Climate investments in higher education buildings: After the 2016 and 2017 calls, there was a new call in the autumn of 2019. UGent proposed investments worth **EUR 1 mio**. The confirmation has not yet been received.

Budget investment plans section II and III:

However, it is certain that the above financing channels will not be sufficient. Large investments, i.e. total renovations, construction of a BEO field, connection to a heat source in the neighbourhood, etc. will require larger budgets.

It is proposed that such projects be given priority in the budget and that the necessary budgets be added to the provision for sustainable measures. Over the years, the size of the required budget will become increasingly clear.

Sustainable investment fund UGent and third-party financing:

Some investments will pay for themselves in a relatively short period of time and can be considered a sustainable investment. UGent has a sustainable investment policy, which means that it invests 90% of its liquid assets (EUR 230,000,000) only in sustainable fossil-free investment funds. In addition, 10% of the total capital to be invested is taken under own management and invested in specific funds in which UGent wishes to participate because they are closely related to the UGent activities or in sustainable projects (23,000,000 EUR).

There is also the option of third-party financing, whereby an external party borrows or raises money via a cooperative from staff, students and local residents and uses it to finance energy projects. However, this is only applicable for projects with a favourable return.

For the construction and operation of a wind turbine on campus Proeftuin, a long lease agreement was concluded with the energy cooperative EnerGent and Ecopower. A participation of UGent through this sustainable investment fund will be considered again later, when the environmental permit is obtained.

For the cooperation with VEB for the accelerated installation of PV systems, it is proposed to set up an internal loan that will make the funds temporarily available. Repayment can be made with the income from operations.

Adjustment of the programme:

In some cases, the both-and story comes under pressure. For a long time, we were able to build and renovate more sustainably, without questioning the programme. We only had to add extra resources to the project budget for extra insulation, solar panels, heat pumps, and so on.

This will not be sustainable. A choice will have to be made between sustainability and the degree to which we deviate from this for the sake of our current comfort requirements (within the legal framework). It is suggested to keep an open mind and keep the common CO2 emission target in mind.

Additional staff:

In addition to a process supervisor for the exercise 'UGent imagines 2050' and the appointment of a study bureau for this assignment, Arnold Janssens was also appointed as assignment holder to specifically focus on a number of projects related to space and energy efficiency (core facilities in the WE faculty, after-care in the EA faculty, etc.). Thomas Block, as assignment holder, can among other things work on new initiatives to link up sustainability issues with student research.

It is proposed to appoint an additional employee to proactively monitor the building management systems and to finance this from the provision for sustainable measures.

Authors: Lina Avet (DGFB), Joke Claeys (DGFB), Miranda De Laet (DGFB), Marc Delgust (fac. EA), Michel De Paepe (fac. EA), Ellen Lauwereys (DGFB), Joannes Laveyne (fac. EA), Greet Persoon (DBZ-Environment), Michaël Seeuws (DGFB), Koen Strijckmans (fac. WE), Christophe Tuypens (DGFB), Arne Van Acker (DICT), Stijn Van de Putte (fac. EA), Benjamin Van de Velde (DGFB), Riet Van de Velde (DBZ-Environment), Ruben Vanholme (fac. WE), Pieter Van Vooren (DBZ-Environment)

Discussed with / tuned to DGFB, DSV, DOZA, DFIN,Transition UGent

Submitted for opinion to Sustainability Committee, Building Committee, Social Council

Approved by the Executive Council on 28 June 2019

The energy policy plan 2020-2030 is part of UGent's climate plan