Sustainable transition towards green growth

Young Talent 2015

Sustainable transition towards green growth

It is urgent to place the human being and nature at the heart of our concerns, and the economy at their service. To persist in maintaining unlimited profit and indefinite growth as the foundation of the world order is completely suicidal.

Pierre Rabhi, 'La part du colibri', Editions de l'Aube.

Young talent meeting 2015

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Amsterdam / the Netherlands

Ed Kronenburg

Ambassadeur van Nederland in Frankrijk

Met de internationale klimaattop ‘COP21’ in Parijs in het vooruitzicht, was het thema voor de 13e Erasmus – Descartes conferentie en bijeenkomst van de Jonge Talenten snel gekozen: “Ecologische transitie en groene groei.” Een onderwerp dat niet uit de lucht kwam vallen. Duurzame groei nam al een prominente plaats in tijdens eerdere conferenties onder de vlag van de Frans-Nederlandse samenwerkingsraad, in 2014 omgedoopt tot Frans-Nederlands Initiatief (FNI). Tijdens de “De Stad van de Toekomst” (2014) en “Iedereen te Eten” (2012) spraken experts uit bedrijfsleven, wetenschap, overheid en de Jonge Talenten onder meer over het belang de voedselketen te verduurzamen en het verbeteren van de leefbaarheid in de stedelijke omgeving.

Het zijn bij uitstek onderwerpen waar de inbreng van jongeren groot is. Het is aan hen om in de toekomst deze complexe maatschappelijke en ecologische uitdagingen aan te pakken.

De wisselwerking tussen de jaarlijkse Erasmus Descartes–conferentie en de Jonge Talenten in het kader van het Frans-Nederlands Initiatief bepaalt voor een belangrijk deel het succes van het bilateraal samenwerkingsverband. In Amsterdam bleek andermaal hoe de onbevangen kijk van jongeren en hun kritische vragen ervaren experts tot nieuwe ideeën en inzichten brengen.
Kortom, de bijeenkomsten van Jonge Talenten hebben prioriteit binnen de Frans-Nederlandse betrekkingen. De *Verklaring Frans-Nederlands Initiatief*, die de beide minister van Buitenlandse Zaken tekenden ter gelegenheid van het Staatsbezoek van Koning Willem-Alexander en Koningin Máxima aan Frankrijk op 10 en 11 maart 2016, laat daarover geen misverstand bestaan: “Het FNI zal zich, op dynamische wijze, vooral richten op de prioriteiten van jonge generaties. Hiervan getuigen de succesvolle ontmoetingen in het kader van de Jeunes Talents.”

With the international COP21 climate summit in Paris in the offing, it did not take long to come up with a theme for the 13th Erasmus – Descartes Conference and Young Talent Meeting: “Ecological Transition and Green Growth”.
This was hardly unexpected. In fact, sustainable growth has also occupied a prominent place in previous conferences organised under the joint flag of the Franco-Dutch cooperative council, officially renamed the Franco-Dutch Initiative (FNI) in 2014. During the editions on “Future Cities” in 2014 and “Food for All” in 2012, experts from the industry, academia and government talked with the Young Talents about the importance of a sustainable food chain and improving quality of life in urban environments.

These are topics on which young people have plenty to say. In time, it will of course be up to them to tackle these complex social and ecological challenges.

The interaction between the Erasmus – Descartes Conference and the Young Talents within the framework of the Franco-Dutch Initiative each year plays a crucial part in the success of this bilateral alliance. In Amsterdam it was proved yet again that the younger generation’s fresh perspective and critical questions can spark new ideas and insights in experienced experts – and that is why the Young Talent meetings are a priority in relations between France and the Netherlands.
The *Franco-Dutch Initiative Declaration* signed by the French and Dutch ministers of foreign affairs on the occasion of King Willem-Alexander and Queen Máxima’s state visit to France on 10 and 11 March 2016 puts it in no uncertain terms: “The FNI will focus primarily on the priorities of younger generations through a dynamic approach that has already borne fruit in the successful meetings of the Jeunes Talents.”

Philippe Lalliot

Ambassadeur de France aux Pays-Bas

Les rencontres des Jeunes Talents franco-néerlandais 2015 se sont tenues à Amsterdam le 29 et le 30 octobre 2015 dans le cadre de la conférence Erasme-Descartes sur la ‘Transition écologique et la croissante verte’ qui a réuni de nombreux participants du monde politique, économique et scientifique de la France et des Pays-Bas. Le choix de ce thème ne devait rien au hasard puisqu’il rejoignait et illustrait les priorités de la présidence française de la COP21 et la préparation de la conférence de Paris.

Lors de leur session de travail, ces jeunes chercheurs et étudiants se sont retrouvés à *De Ceuvel*, lieu emblématique d’Amsterdam qui met en œuvre les derniers progrès en matière de gestion durable et qui constitue un exemple d’une société orientée vers l’économie circulaire.

Les débats de la conférence, auxquels les Jeunes Talents ont largement contribué, ont montré que la transition écologique et la croissance verte étaient en marche dans nos deux pays et que des marges de progrès étaient possibles.
Ces débats ont permis aussi de souligner la grande convergence de vues entre la France et les Pays-Bas. Par leurs initiatives, leur dynamisme et leur esprit d’innovation, nos deux pays sont en effet à la pointe de la lutte contre le changement climatique et de la recherche de l’efficacité énergétique.

Ces débats ont enfin permis de mieux exposer les défis de la transition écologique, auxquels nos sociétés sont confrontées, et de mettre en avant les propositions de solutions formulées par ces Jeunes Talents. Ce livret rassemble l’essentiel de leur travail, de leurs réflexions et de leurs recommandations. Je vous en souhaite bonne lecture.

Meetings of the French-Dutch Young Talents 2015 were held in Amsterdam on 29 and 30 October 2015 in the context of the Erasmus-Descartes conference on ‘Ecological Transition and Green Growth’, which brought together many participants from the political, economic and scientific world in France and the Netherlands. The choice of theme was far from haphazard, as it reflected and illustrated the priorities of the French Presidency of COP21 and preparations for the Paris conference.

During their working session, the young researchers and students met at De Ceuvel, the iconic location in Amsterdam that is putting into practice the latest progress in sustainable management and is an example of a society geared to the circular economy.

The conference debates, to which the Young Talents made a substantial contribution, showed that ecological transition and green growth were under way in both our countries and that there is still scope for progress.

The discussions also served to highlight the broad convergence of views between France and the Netherlands. Through their initiatives, dynamism and spirit of innovation, the two countries are spearheading the campaign against climate change and the quest for energy efficiency.

Lastly, the debates also helped to state more clearly the challenges to ecological transition that are confronting our societies, and to put forward the proposed solutions formulated by the Young Talents. This booklet is a compilation of the essence of their work, their thinking and their recommendations. I hope you enjoy reading it.

‘Young Talent’

In the framework of European cooperation, EP-Nuffic in The Hague and the *Réseau franco-néerlandais* (French–Dutch Network) at the University of Lille 3 are working together to strengthen the ties between the Netherlands and France in the area of higher education and research.

Since 2005, one of the showpieces of this cooperation has been the organisation of a **‘Young Talent’** meeting together with both country’s embassies and ministries of Foreign Affairs. This event is directly linked to the Erasmus–Descartes Conference.

The aim of the ‘Young Talent’ meeting is to start a dialogue on a current issue between young French and Dutch students and recent graduates who are active in various disciplines and come from diverse backgrounds, including scientists, writers, economists, theatre makers, journalists, politicians and artists. The participants discuss the central theme, exchange experiences, ideas and knowledge and draw up proposals for a common approach to possible solutions for the European dilemmas under consideration.

The central theme for the sixth ‘Young Talent’ meeting was ‘Ecological transition and green growth’. For this year’s meeting 32 Young Talents came together at De Ceuvel, a self-sufficient, sustainable restaurant and office space in Amsterdam North – a suitable setting that underlined the importance of the theme and served as an immediate source of inspiration for the participants. This sixth Young Talent report, drawn up and distributed by EP-Nuffic and the *Réseau franco-néerlandais*, presents the results of the working groups and the plenary sessions held in Amsterdam on 29 and 30 October 2015.

For more information on Young Talent / Erasmus-Descartes conference 2015:
Programme: https://issuu.com/ifpb2015/docs/programme_provisoire_conf__rence_er
Video: https://www.youtube.com/watch?v=ZdmxX9yVGs4

Introduction

to the Theme & Event
by two
Young Talents

Connection and collaboration: reflecting on the Erasmus-Descartes conference and the COP21 from a youth perspective

ERIK-JAN VAN OOSTEN

The topic of the invitation by EP-Nuffic/RFN seemed clear and simple: the ecological transition and green growth. Isn't that what we all want? But what does an ecological transition look like? When can growth be called 'green'? I had the privilege to work with 29 other young, motivated people and to present our views at the Erasmus–Descartes conference, where we tried to answer these big but pivotal questions. One of our key findings is that the ecological transition and green growth have little to do with one another if we stick to the way they are currently defined. We either transition to a more circular, sufficiency-oriented and rewarding society where the ecological footprint of a country corresponds with its size, or we grow the consumption and production of green goods and services in such an efficient manner that, despite an increase of wealth and consumption, our total impact on the environment still shrinks. The ecological transition changes the direction and aim of development, while green growth changes the colour of the arrow which, however, remains fixed at the same aim.

The generation gap I felt at the Erasmus–Descartes conference, and at the COP21 for that matter, is related to this distinction. The process of growth and modernisation has brought many great things after World War II. However, whether it is due to the financial crisis, the environmental limits to growth or the austerity measures imposed by governments, since my generation has reached adulthood we have been confronted with the downsides of the growth imperative. One look at the youth unemployment figures for Europe should say enough. This makes us a bit sceptical with regard to (often well-intentioned) changes that were presented at the conference, such as sustainable aviation and carbon offsetting: these measures do not challenge the unsustainable system that no longer serves our interests.

Another major difference is that, unlike previous generations of environmentally conscious people, we are not trying to save the environment for our children or grandchildren, at least not as our primary motivation. Our own lives and futures are at stake here. This might make us less altruistic, but I believe this also makes us more ambitious than other generations. We create our own start-up companies, strive to make our universities greener, transform our cities and become highly networked through social media. Why companies and governments are so reluctant to hire us is beyond me.

I feel this will change in 2016, however: the level of ambition as displayed on the COP21 by many world leaders and as clearly reflected in the climate treaty shows that the climate is given more priority. It will be a huge undertaking to translate these goals and ambitions into measures with a real impact, and we are more than ready to take on this challenge.

Whether it will be green growth or an ecological transition, we are ready to do what we do best: making an impact through connection and collaboration.

To respond to the need for system adaptation we must include young people! Not because they are young, but because who is going to implement today's decisions if not us?

YANIS LAMMARI

More and more people contest the idea that young people are not experienced enough to make important decisions. Indeed, after a long time of praising experience and maturity, we have to admit that making bad decisions is not a question of age. If we want proof, we just have to open our eyes to our unfair and unsustainable global system. The current system, which gives power of decision mainly to those who are part of the current paradigm, is responsible for our crisis. So let us work together to change it. But how do we do this when the actors of the future, young people, are not part of the decision-making process?

Indeed, whatever the field, it is an almost impossible mission to find young people who reach the top of the hierarchy. The 'glass ceiling' is a reality for the young (both boys and girls)! There are some initiatives that could change this. Inviting young people to international conferences is one of them. However, the true question is not whether young people are present, but in what capacity and also what kind of young people. Most of the time when young people are invited they are still considered to be spectators who have everything to learn and nothing to share, even though many of them participate in the green transition and sustainable development. They would be able to offer inspiring ideas, especially if the organisers of such conferences would stop always going through the traditional system which does not allow the diversity among the youth to be represented. Indeed, nobody says that young people are going to do better than others, firstly because, unfortunately, some of them do not care about sustainable development or political decisions, and secondly because young people who want to participate in this change of paradigm will not be able to do it alone, they need their more experienced elders.

The main goal of the COP21 meeting was to create a 'Paris Climate Alliance' that would reach a new international, balanced, long-lasting agreement, aiming at keeping global warming below 2°C (36.5 °F) compared to pre-industrial levels, thus transitioning countries to a low-carbon economy.

That is why the Erasmus–Descartes conference can be considered progressive: its young participants are not only observers, and they are not all from the same background and type of education. They have worked together before and give their vision – even if it is not fully listened to: politicians or CEOs often declare they support our initiatives but say the exact contrary of what we suggested. If we want to change our system and refuse to allow the lack of interest in politics amongst the young to keep growing, young people have to be fully involved and taken into account in political decision-making together with their elders.

This is not only because they are the future, but also for a pragmatic and effective reason. Indeed, the only question policymakers should keep in mind is: who is going to implement the text they are discussing at the Erasmus–Descartes conference or the COP21 if not young people? They speak about the energy transition, green growth and new business models for the future, but they are often older than 50 and will probably not be around to implement the decisions they take. An important first step would be to generalise and reinforce the participation of young people as real actors in all international conferences. We do not want to replace policymakers or to be considered as a special actor with special rights. On the contrary, we want to learn from them, but to make that possible we need to be considered as equals, under the same rules.

Of course, we do not have as much experience as the current decision makers yet, but maybe that is what we need to accomplish system change. Experienced people from within the current system and young people working hand in hand to think outside the box in a structured and efficient way: that was the idea of Ban Ki-moon, Secretary General of the United Nations in the *Guide to Youth Delegates to the United Nations*. In 2010, he called 'to support youth participation at intergovernmental meetings and to allow the voices of young people from all over the world to be not only heard, but acted upon.' To achieve this, the United Nations promised to invest massively in education and particularly in education on sustainable development. They also encourage the inclusion of at least two Young Delegates in every international conference. As Youth Secretary General of the UN Ahmad Alhendawi often underlines, many young people who had the opportunity to be a young delegate at international conferences are today key international actors and are indispensable to improving our system.

A better inclusion of young people in political decision-making should also be a matter of concern for other fields and sectors. From an economic perspective, many young people create new, more sustainable business models, and they should be encouraged to do so and supported by their local policymakers and banks. Muhammad Yunus began to establish his huge microcredit empire in his thirties, and the Airbnb founders were even younger when they helped develop the sharing economy. Young people could also help multinationals become more sustainable for the sake of our economy, our society and our environment. For instance, the French international hotel group Accor decided in February 2016 to start a pilot in a French hotel with a 'shadow' executive board that only included people under 35, with more women and international members than the current one. The aim is to compare the decisions made by the 'classic' board (mainly composed of French men in their fifties) and the 'shadow' one (much younger, more gender-equal and international) to create a more sustainable dynamic for the group. Consulting young people for the highest level of strategy of a multinational is a real innovation in decision-making.
Young people did not wait to be consulted to act: they already show and prove their ability to be a fundamentally important actor in sustainable development every day. So many examples of young initiatives could be given to justify the need to integrate the young in decision-making processes in every field. For example, Youngo, the youth constituency of CCNUCC, fought successfully for the inclusion of intergenerational equity and climate change education in the COP21 agreement. As a more local example, a group of students of the *Bureau Du Développement Durable* (B3D), inspired by the César-winning documentary 'Demain', decided to enhance sustainable development initiatives. They did so through a Tour Des Solutions Alternatives crossing France from north to south, supporting the Young Talent initiative of the Erasmus–Descartes conference in particular. Many initiatives already exist, and young people have the opportunity to spread them through a creative, dynamic and positive perspective – which should be a particular quality of youth. It is indispensable to reinvent our way of communicating about sustainable development. Young people have the opportunity to show how it can improve our life. No more guilt: we need to stop blaming people for their behaviour and, on the contrary, convince them to change using positive and innovative means. For example, it is possible to break stereotypes of how expensive organic food or fair trade products are by comparing two shopping baskets or t-shirts, where one is sustainable and the other is not but they both have the same price. Yes, sustainable development is attainable and sexy, so let us be seduced!
Many young people are full of ideas and are ready to play a role in making decisions at the highest level. Now, will decision makers let them be fully involved in our current system to help them change it?

Articles

Young Talent's point of view & propositions

To a sustainable civilisation: on a transition that is essentially human

ROB TERWEL

There is an incredible body of literature on energy systems and the environment, offering many perspectives, insights and discussions to those interested. Yet this topic is about everyone of us, and especially those not interested at first glance. This article is a synthesis of brainstorm sessions and group discussions we had on the day prior to the Erasmus–Descartes Conference and at the conference itself. It goes beyond stating the problems (those are more than evident) and contains concrete recommendations which target the heart of the system. We believe environmental challenges for the largest part have to be overcome through a behavioural turn. In spite of technological developments, the individual and his or her decisions still take centre stage – our infrastructure, technologies and resources are merely external. If we truly want to tackle current problems, and especially if we want to prevent further environmental disturbance, we should focus on what is at the very core of these problems: ourselves.

A rewarding society

One key aspect in transitioning to a more sustainable society is our evaluation of and approach to decisions or initiatives concerning the environment. Interestingly enough, people tend to be rather critical when someone who presents himself or herself as ‘environmentally minded’ and has a corresponding lifestyle makes a decision that somehow is not fully in agreement with this – say, travels a lot by plane. It seems that many people think that when you support a cause, you should fully support it; otherwise it is not worth it or not good enough. But we do not have to be fully ‘green’ in our decisions, and that is also not at all our message. No one should be obliged to do that. However, what we would like to put forward here is that we should recognise good, environmentally friendly decisions as such: not just criticise and dismiss what is negative, but more than that support and reward what is positive.

This shift is realised in what we would like to call a ‘rewarding society’. In this society, on a personal, social, organisational, entrepreneurial and governmental level people and organisations are rewarded for their ‘green behaviour’. Implementing this could be as simple as a green thumb on Facebook, showing respect to people going to work by public transport or bike, rewarding sustainable business cases, levying lower taxes on green products or rating recreational facilities (e.g. restaurants and hotels) on how green they are.

A circular society

Yet how do we see that we are making progress in transitioning to a more sustainable society? The traditional and most common way of evaluating a country’s status is quantitative, often in terms of economic indicators. We measure the economic activity of the energy sector and present a plenitude of data and charts ranging from offshore wind turbine electricity generation to tons of waste recycled in Amsterdam. But frankly, as such, most of these numbers actually mean very little. To the average person, these data are often too disconnected from our daily lives and give very little insight. We can present wind-generated electricity in TWh (10^9 kWh) and it seems like quite a lot. But we could also say that it only amounts to a few per cent of total electricity production – which describes a relation and is therefore much more informative.

Taking a step further, we should express these numbers as an average per person – for instance, average waste generated and recycled per person. We should relate people to the energy system that they are part of.

We should not even speak of a circular economy, but about a circular society – a circular economy is about making what is generally considered waste in one respect useful in a different respect. This is, however, still about consumption and material goods. A utopian circular economy still largely deals with the *consequences* of our behaviour and does not entail anything about our awareness of the system. In a circular society, we look at the bigger picture, and also include people’s behaviour and their awareness and knowledge of the system.

The balance between needs and desires

Put simply, our energy system, as much as any economic system, is about demand and supply. The trouble is that in our everyday lives it is very hard to see the relation between the two: we take for granted that our demands are met. Electricity supply is always greater than demand; if not, our lights, computers and chargers would shut down. Having a supply that (nearly) always exceeds demand is largely what the term ‘security of supply’ comes down to. Our demands are so securely met and our freedom to do whatever we want is so large we get out of touch with how we take part in these systems and forget that we are actually also responsible for our choices.

Then how can we decrease our environmental footprint, while still ensuring security of supply? Since demand drives and supply follows and anticipates it, this comes down to finding a balance between needs and desires. Without going too much into definitions and borderline cases, we can safely state that our needs are relatively fixed and time-independent, but our desires are free and limitless. If you feel like buying a new pair of shoes, you can go to a store

anytime, purchase some and no one will stop you. But is it necessary to buy more? You might think it does not matter.

You can find a better balance between needs and desires by asking yourself the question whether your choice is primarily based on and motivated by a desire or a need. If it is a desire, ask yourself the question which higher need corresponds to it, if any, and follow it. Let needs be leading and determine demand, not desires.

Many of our flawed choices are a result of us not seeing the bigger picture. Again, in a circular society, awareness of the system allows us to make better choices and therefore reduce our impact on it. Therefore, there is a major role for education – informing the old and young about our energy system. This is not just a task for governments and institutions – transparency in companies (and their product chain) can help just as much, if not more.

Through rewarding and praising green initiatives and decisions on a personal and professional level, measuring our progress towards a transition not solely in quantitative and economic terms but also in personal, relative terms, and broadening our concept of a circular economy to a circular society in which there is a balance between needs and desires through education and reflection, we believe we can truly advance from a rather primitive, consumption-focused population to a more elevated, sustainable civilization. One that is not bound by desires, but aided by a healthy balance between desires and needs.

Enabling people to solve societal (and environmental) problems

STIJN VAN GILS, VALENTIN LEFRANC AND MARGOT HOUWERS

Environmental issues, such as climate change, often get pushed into the background by daily societal problems. That is a pity, because societal problems can also be tackled while solving environmental issues. People should be enabled to find their own solutions while governments should have a long-term vision.

Climate change is a big problem, because it increases the chances of flooding and crop failure and also gives rise to new human diseases. Important decisions and actions must be taken quickly in order to stop the temperature from rising too far. Unfortunately, climate change is not the only environmental problem caused by human beings. The world is threatened by all sorts of environmental hazards, ranging from land-use change to pollution from microplastics. Nevertheless, environmental issues are often pushed to the background by societal problems that appear more visible and urgent. Every day, newspapers are filled with topics like the survival of the Euro, the war with IS and Syrian refugees. In addition, or perhaps as a consequence, citizens show an increased distrust in the societal system, potentially leading to a political shift towards radical solutions such as the removal of Greece from the eurozone or closed borders and a ban on immigration.

These urgent societal problems are thus the core focus of political movements. Long-term environmental problems are often ignored or even denied, giving the impression that societies and the natural environment are two non-related, separate entities. However, global conflicts can also be solved by focussing on environmental problems. In the Syrian crisis, for instance, the problem is mainly framed in terms of Muslim extremism. It is often overlooked that severe droughts followed by crop failure had a catalytic effect on the conflict. Improving the drought resistance of agro-ecosystems and thus stability of yield, thereby giving people a better perspective, may be more effective than solely fighting against Muslim extremists.[1]

Enabling people rather than forcing them

Within Europe, too, we could take an integrated view on societal and environmental problems. To put it simply, there is one big problem that underlies various societal problems: people experience fear about the future and have the feeling that they are not heard in decision-making processes. People can be forced to use less energy or place windmills in their backyard to reduce the amount of carbon in the air, but this will mainly lead to rejections and protest. Instead, they can also be enabled to find solutions themselves. Local communities should get the freedom to implement solutions in the way they want. This means that energy production and consumption should be organised on a more local level.

By giving communities a carbon budget, they may decide for themselves how to reach their goals. This will create a greater sense of local connection and shared responsibility, leading to a more coherent social structure. Communities are free to build windmills or solar parks or maybe something completely novel, to focus on the reduction of energy, or to buy carbon rights from other areas. Opportunities to produce renewable energy differ from place to place. Although even in dense cities there is potential to create more renewable energy, it is likely that rural areas are better equipped in terms of energy supply. Interestingly, these rural areas are currently relatively poor compared to cities. As local communities are free to find their own solution, it might be that money will flow from relatively richer cities to poorer rural areas, creating new economic opportunities and activities in the rural areas.

Setting clear boundaries with a long-term perspective

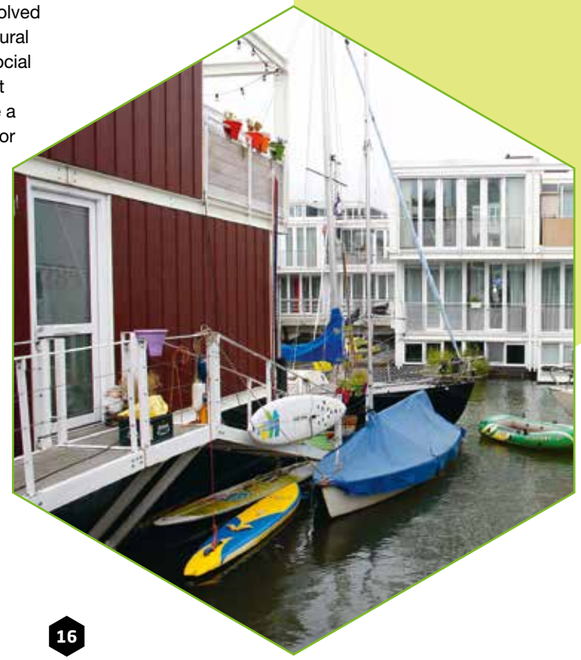
To make this project successful, national and international governments should set clear goals with a long-term perspective rather than changing their policies from year to year. Practically, this means that various types of pollution and carbon emission should have a clear limit or end-phase. As a result, companies as well as local communities can make long-term plans to incorporate these governmental goals, without running the risk that investments become useless after a few years due to changing policy.

Having a clearer long-term perspective would thus create more trust in the government and a higher willingness to participate. Essential for long-term governmental policy will be a transition from taxing labour towards taxing resource use. This is not only beneficial for the environment, it will also lead to an increase of the competitiveness of labour, and therefore to job creation and probably to an improved competitiveness of Europe, considering the fact that its labour is relatively expensive. Currently, some efforts are already being made with regard to the so called ‘greening’ of the tax system. However, major efforts are still needed as the majority of taxes are still directly or indirectly based on labour, rather than on the impact on the environment.

Better products, less tax
One specific tax that should be changed is the value-added tax (VAT). In a truly green tax system, buying services that do not imply transfer of raw materials should not be VAT-taxed, or only marginally so. As a result, corporate strategies will change and services get a competitive advantage over products, which will change business models. For instance, currently it is in the interest of producers to make products that break down easily, as this gives them the opportunity to sell new products later on. If the transfer of resources is heavily taxed, however, these products become very expensive. It then becomes more attractive for consumers to pay for a service rather than a product (e.g. light instead of a lamp). In such a scenario, the perverse incentive for producers to make bad products will also be diminished.

By combining small community-based economies with a long-term, stable policy and a green tax system, societies will be more stable and in much less danger of becoming involved in social conflicts. In the long term, this could prevent natural disasters that would cause mass migration and related social tension. Hence, environmental problems are no longer yet another threat to our society, but an opportunity to create a better social and natural environment with opportunities for sustainable economic growth.

[1] http://www.pnas.org/content/112/11/3241



Towards green growth for nine billion inhabitants

GINO BAUDRY

Towards an ecological transition and green growth! Towards an ‘ecological transition’ and ‘green growth’? The current economic model is based on the transformation of raw natural resources and generating added value through the resulting trade in goods and services. The sum of these added values is commonly known under the term GDP, the ‘Gross Domestic Product’, and its yearly growth is what we call ‘economic growth’. Across the globe, economic growth is the main indicator of wealth. It is also one of the principal criteria for measuring the effectiveness of public policies, despite the numerous ‘non-senses’ which it creates.[1] Since 1972, the Meadows report has alerted public opinion to the limits of a developmental model based on infinite economic growth while using finite resources.[2] If we take a look at the scale of our impact on the environment, for example through our so-called ecological footprint, we would need the equivalent of 1.6 planets to meet the yearly needs of the world population. The ecological footprint can also be expressed as an ‘ecological debt’ by calculating the moment in the year we exceed the planet’s production and waste-absorption capacity. In 2015, humanity entered this period of ‘ecological debt’ on 13 August. After this date we were living on ‘environmental credit’ towards future generations by (over)using the non-renewable resource stocks of our planet.

History has shown repeatedly that regardless of alarming signals, states and individuals have great difficulty anticipating, understanding and even learning lessons from crises. In order to change course, all countries need to start acting because the responsibility for the environmental impact is ‘common, but differentiated’. So how can we mobilise populations that do not even have the resources to fulfil their basic needs? Nowadays, 1.2 billion people do not have electricity, 800 million are living below the food poverty line, 2.4 billion do not have access to sanitation facilities[3] and 800 million people[4] do not have access to drinking water either – the list goes on. In other words: green growth and ecological transition, but for whom? In order to respond to the challenges of sustainable development, a change of paradigm is needed, i.e. a change of the way we conceptualise our model of development itself. The Organisation for Economic Cooperation and Development (OECD) defines green growth as follows:

1. ‘A practical and flexible approach to realise concrete and measurable progress in all of its economic and environmental components, while taking fully into account the social consequences of greening the growth dynamics of economies.’
2. ‘The line of action for green growth is ensuring that natural assets can be exploited to their full economic potential in a sustainable way. This involves primarily providing the services that are essential to life – clean air and water, resilience of biodiversity – vital for the production of food and human health. Green growth policies take into account the fact that the earth’s natural resources are not indefinitely substitutable.[5]

Firstly (1), the accent is put on the measurable aspect of socio-environmental impacts. The conceptualisation – the reference system – we choose to define our developmental model is crucial: going beyond economic growth and GDP as the indicators of well-being and as criteria for the effectiveness of public policies and investments choices. Secondly (2), green growth is defined as a developmental model that takes into consideration the environmental limits of our planet.

In many ways, the concept of green growth makes sense, but under which conditions would implementation and adaptation of such an economic model be feasible for an estimated world population of nine billion people in 2050? Can we in fact reconcile the growth of production and the population with a decrease of greenhouse gas (GHG) emissions? If we want to encourage the promotion of a more equitable and responsible model of development, we should put our needs and behaviour into question, both on an individual and a collective scale:

- **Reducing food waste.** Every year, between 30% and 40% of total food production – representing 1.3 billion tons – is produced without being consumed. Besides the fact that from a social point of view this makes no sense, bearing in mind the previously-mentioned 800 million people living below the food security line, this waste would cover a surface 1.5 times the size of China. It generates approximately 3.3 tons of GHG[6] each year, 8.25% of worldwide CO^2 emissions in 2011.[7] An ecological transition requires joint action from citizens, public policymakers and industries 'to make possible what is desirable' regarding food waste and also consumption in many other domains.
- **Encouraging large-scale deployment of renewable energy technology.** However, the ecological transition cannot be boiled down to a simple substitution of fossil energy sources with renewable ones.
- **Promoting a frugal and efficient use of energy.** In Figure 1, the International Energy Agency shows the trends and developments of our energy demand and CO^2 emissions:

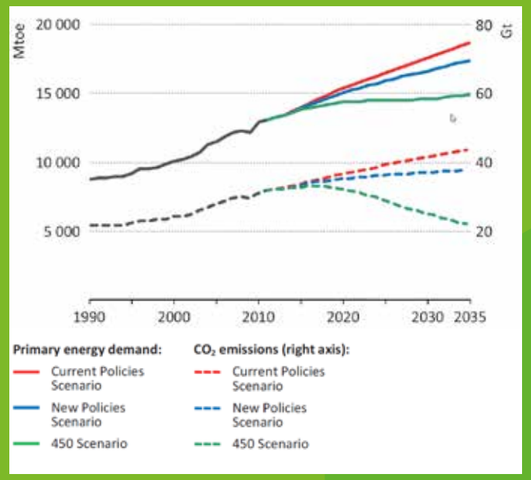


Figure 1 – The development of energy demand and CO^2 emissions 1990–2035[8]

In 2035, the world's population is projected to reach 8.7 billion people who, without ambitious energy policies, will cause an increase in CO^2 emissions of 40% compared with 2011 (Figure 1, Current Policies Scenario). In order to attain a trajectory that manoeuvres us back within the limits of our biosphere we need to have reduced our CO^2 emissions by 30% by 2035 (Figure 1, scenario 450[9]). Policies promoting the frugal and efficient use of energy are the most important means to decrease GHG emissions, followed by the deployment of renewable energy technologies. In essence, we will have to reduce our energy use by 20% compared to the projected trend and we would have to limit the use of fossil energy to 64% of the total energy consumption by 2035 (compared to 82% in 2011).

- **A selective downsizing according to different fields and forms of consumption.** In the current case, green growth by means of energy efficiency (efficiency of motors, thermal insulation of housing) and the development of renewable energy sources (wind, solar, etc.) also requires a decrease of energy consumption. In 2011, 1.85 energy units were available per person per year, whereas the target for 2035 will be to reduce this consumption to 1.7 units. In other words, green growth should not be understood as a growth of the GDP through more responsible economic activity, but rather as a developmental model which will only be possible through a selective growth and downsizing of different fields and forms of consumption. The main aim of green growth has to be to improve individual and collective well-being, not GDP growth.
- **Defining new criteria for measuring the effectiveness of public policies and investment choices.** After more than 23 years of negotiations and 21 COP conferences, the international community has reached a crucial agreement which aims to keep the rise in global average temperature below 2 °C – or even 1.5 °C if possible – by the end of the century. This implies that when we reach the year 2050 we should have reduced our global CO2 emissions by a factor of 5 compared to 2015. How are these objectives defined and how will they be implemented in the Netherlands and France? Let us first analyse the current situation. In 2011 the biocapacities of the Netherlands and France were respectively 1.1 and 3 hectares per person per year. The surface required to meet the population's demand shows a different image however: 4.5 and 3 hectares, respectively (Figure 2). Despite similar standards of living, the ecological footprint of these two countries is structurally different, mainly due to a higher population density and a more significant use of fossil energy in the Netherlands. Hence, just like the responsibilities, the effort to mobilise is also differentiated.

Green growth, defined as the transition towards a model of economic development that is respectful of the environment and concerned about social injustice,[11] is considered to be a major lever of sustainable development for both countries. The measurement framework is the basis for developing policies that not only favour green growth but also follow its evolution. In other words, we should define new criteria for the effectiveness of public policies and investment choices.

- **Simple and concrete solutions.** According to ADEME,[12] by 2050[13] France will have to reduce its energy consumption by a factor of 2 compared to 2010 while multiplying the contribution of renewable energy by 2.5 in order to reach its objectives of reducing CO^2 emissions. Two main ways of decreasing energy consumption are **thermal insulation of housing and of new and existing buildings as well as an urban reorganisation to reduce the impact of the transport sector.** The latter should also promote the use of public transport by citizens and the use of railway lines for transporting goods. The national institute *PBL Netherlands Environmental Assessment Agency*[14] indicates that the Netherlands should reduce their CO^2 emissions by a factor of 5 by 2050 by following a strategy built around four primary objectives: **the reduction of energy consumption, the use of biomass, the capture and storage of carbon and a decarbonised**

Figure 2 – Ecological footprint of The Netherlands (left) and of France (right) [10]

electric power supply. Taking into account the territorial specificities, the institute underlines the importance of **using biomass and deploying techniques of capturing and storing carbon**. These are necessary conditions, but the two alone will not suffice to meet the country's targets for reducing CO^2 emissions by 2050.

- **A careful choice of words.** Towards an 'ecological transition' and 'green growth'? For over a century, our developmental model has generated constant growth of the GDP, but also a constant degradation of the environment, inequality and social injustice. In this context, are the words 'green growth' well chosen for initiating a real change of paradigm? Let us forget about the pipe dream of an all-saving green growth which allows for a continuous increase in consumption while respecting the environment and social justice for a world population of nine billion people. From our humble point of view, an ecological transition implies a process of selective growth and degrowth that promotes a green and socially responsible economy. A careful choice of words is not insignificant because the change of a single word can deprive a text or objective of all its content.

With what has been written here, we have underlined the importance of frugality and responsibility with regard to, among others, our energy and food consumption. Be it individually or collectively, privately or publicly, we need a change of paradigm: economic performance can no longer be the principal criterion for the effectiveness of public policies, for consumption or investment choices and even less so for our well-being. The COP21 made it possible to reach an international agreement that is necessary, but not sufficient for promoting a true ecological transition. The implementation of public policies has to make possible what is desirable, but it will be up to every citizen to be involved in the ecological transition.

[1] *La richesse autrement,* Alternatives Economiques, March 2011.
[2] Club of Rome, *The Limits to Growth* (1972), 2012 (French edition).
[3] Ibid.
[4] Data World Health Organisation, 2013.
[5] OECD Definition – OECD, *Towards green growth*, May 2011.
[6] FAO, *Global food losses and waste*, 2011.
[7] Manicore: Comment évoluent actuellement les émissions de gaz à effet de serre? 2013 (Chiffres pour l'année 2011).
[8] IEA, World Energy Outlook, 2013.
[9] CO2 concentration objective in parts per million in the atmosphere in order to keep the rise in global average temperature below 2 °C towards the end of this century.
[10] NGO Global Footprint Network (2014). The quality of the data is evaluated on a scale from 1–6, with 6 being the most reliable and 1 the least.
[11] Conseil économique pour le développement durable, *La croissance verte: Principes et instruments de politique économique*, 2008.
[12] Agence de l'Environnement et de la Maîtrise de l'Energie en France (The French Environment and Energy Management Agency, ADEME).
[13] *Contribution de l'ADEME à l'élaboration de visions énergétiques* 2030-2050, 2015.
[14] *Exploration of pathways towards a clean economy by 2050: How to realize a climate-neutral Netherlands*, PBL – The Netherlands Environmental Assessment Agency, 2011.

Industrial ecology, a key concept of the circular economy

AURÉLIEN BRUEL AND MAËL JAMBOU

Young talents gathered for a two-day workshop on the ecological transition towards sustainability. One of the round tables dealt with the circular economy as a means to launch this transition. Thanks to the young talents' expertise, the discussions led to a recognition of the importance of industrial ecology within the circular economy. The following sheds light on these concepts and gives a concrete example of industrial ecology.

Circular economy overview

Linguistically speaking, the circular economy (CE) is an antonym of the current linear economy. A widely-adopted model in developed countries, the linear economy considers our resources to be unlimited and our environment as an outlet that can absorb all the by-products of our production process (waste, emissions). The linear economy gets a major contribution from natural capital deterioration, both during resource extraction and waste discharge. This vision of the economy is not sustainable. In recent years, CE has emerged as a new paradigm able to overcome the current model of production and consumption based on unlimited growth and the increasing use of natural resources. One of the main objectives of CE is to decouple environmental pressure and economic growth. To achieve this, it promotes the adoption of closed-loop production models in order to increase the efficiency of resource use while ensuring the proper functioning of ecosystems and human well-being.[1]

Among countries that have incorporated CE into their policy, China appears as a pioneer. In fact, the Chinese government has adopted CE as a 'national strategy' since 2002, accompanied by a legislative package. In Europe, significant work has been carried out by think tanks and NGOs to promote CE in European politics and in business. The Ellen MacArthur Foundation has contributed greatly to raising the profile of the circular economy through the production of three reports on the topic for businesses. Recently, the European Commission has organised a CE package with its own action plan. Countries like France and the Netherlands have followed this particular dynamic to promote CE in their institutions. France has thus included CE in the 'energy transition' law for green growth of the 27 August 2015. Section IV of this law focusses on the problem of waste and on the promotion of CE. The Netherlands, pioneer in the implementation of CE, launched a 'Green Deal' programme in 2011. This programme is a central instrument for the development of green growth in the Netherlands, and it is divided into nine topics, including one dedicated to CE.

Governments, international organisations and companies that are implementing CE strategies are working with several theoretical and practical concepts (cradle to cradle, performance economy, biomimicry, Economy blue, cleaner generation, regenerative design and industrial ecology (IE)). IE is relevant to most of these approaches, which is why it is considered to be a key concept for CE. Moreover, the roots of CE are mainly based on IE theory. For instance, like IE, CE also fosters a closed-loop production model. Finally, IE has an interdisciplinary approach, which is needed to cope with complexity and implement the ecological transition towards sustainability.

What is industrial ecology?

CE is based on the practical and theoretical aspects of industrial ecology (IE). As the name suggest, research in the field of IE has looked at natural ecosystems as a model for

industrial activity. It promotes the view that industrial systems can reduce their impact on the natural environment, while at the same time improving their economic performance through efficient recycling of material and energy flows. Industrial ecology takes place at three levels: the company level, the inter-company level and the broader geographical level of a city, a group of cities or region.

- At the company level, the approach is product-oriented. It encourages companies to adopt cleaner production technologies and implement eco-design of products. This approach involves economic actors directly related to the product, such as suppliers, consumers and designers.
- The inter-company level refers to the ideas of the eco-industrial park and industrial symbiosis. The idea is to establish waste-exchange systems (e.g. of by-products or heat) between companies or business clusters. This approach also encourages sharing of common services or infrastructure.
- At the level of a city or region, the concept of industrial symbiosis is extended to a city (urban symbiosis) or even a region.

At each level, different tools or methodologies are designed to study the physical flow of matter and energy. At company level, Life Cycle Analysis (LCA) is mainly used. LCA assesses the environmental impact throughout the life cycle of a product, from raw material extraction to the end of its lifespan. Eco-design tools are also used that help take environmental impacts into account in the design and development of products. The two other levels use methodologies focussing on industrial, urban and regional metabolisms, using tools such as material flow analysis. Moreover, some tools are used to understand the socioeconomic behaviour of actors and organisations, but also to identify territorial drivers and challenges.

Both CE and IE promote the view that industrial systems can reduce their impact on the natural environment while at the same time improving their economic performance through the efficient recycling of material and energy flows. Indeed, the theoretical foundation of CE is mainly based on IE theory. One of the features of IE is to approach sustainability on three strategic levels (company, inter-company and regional). These concepts are of relatively recent origin, and they are still in development. Young people have an important role in making the ecological transition possible. French and Dutch youth meetings are an opportunity to share knowledge, build ideas and spread them in public institutions and companies to develop novel paths to sustainability.

[1] A. Murray, K. Skene, and K. Haynes, 'The Circular Economy: An Interdisciplinary Exploration of the Concept and Application in a Global Context', Journal of Business Ethics, pp. 1–12, 2015.

[2] UTT – Research Centre for Environmental Studies and Sustainability (http://creidd.utt.fr/fr/index.html).

[3] Guide issu du projet de recherche Synergie-TP réalisé avec le soutien de l'Ademe, Comment appliquer l'écologie industrielle et territoriale aux travaux publics?

An example of a case in France

In France, one of the pioneering regions in IE is Aube Champagne-Ardenne, where an IE club *(Club d'Écologie Industrielle de l'Aube)* was launched in 2003. The Club's goal is to optimise the use of energy and matter by creating synergies at the regional level. Thanks to this French driver in the field of IE and the University of Technology of Troyes (UTT)[2] various synergies have already been created, for example between the companies *Cristal Union and Eiffage*, who conducted an emblematic experiment in the region. The sand left over from washing beets at the sugar factory *Cristal Union* used to be spread on the surrounding fields in a radius of 30 kilometres. Today, this sand is used by *Eiffage Travaux Publics*, a construction company, in substitution of quarried materials. The construction of the Troyes ring road is also often cited as an example: here, the use of recycled materials made it possible to reduce the use of new material by 12,000 tons, enabling a cost saving of almost 12%. To ensure the project's sustainability, a comparative evaluation was conducted using two methods: Life Cycle Assessment (LCA) to evaluate the environmental impacts generated by emissions and extractions associated with the project, and a Social Life Cycle Assessment (SLCA) to evaluate social and societal impacts arising from activities undertaken during the project.[3]

Taking circular economy seriously: thinking about culture

JÉRÉMIE JOUBERT

In a consumer society with a technically advanced economic structure, the issue of the environmental transition becomes critical. More so than for France, a shift toward a more circular economy would be particularly suitable for the Netherlands because of its very specific geographic situation. Nevertheless, as the current Dutch situation has its historical roots in at least five hundred years of active promotion of global trade, this change would require not only economical but also major social and cultural evolution. So to what extent can people adapt to important changes in their everyday life, in housing and consumption for instance, in habits and work practice, family structure, business strategies, etc.? There is still an important gap between catchphrases – like circular economy – and the reality of practice. The responsibility we have to think about the transition might be taken as an opportunity to start inventing better lifestyles. But what strategy can help us design these?

Introduction

For a French person interested in regional development strategies, the Netherlands is a surprising and fascinating country. The goal of this paper is not to sum up what struck me during the Franco-Dutch Young Talent forum that took place in Amsterdam last November. I would rather take the opportunity to present a few thoughts on the extent to which the circular economy might be relevant for the Netherlands in the near future. By pointing out a few issues, I will try to demonstrate that, if we want to operationalise it, the circular economy concept should not only be considered in its classic form: as a driving concept of techno-economical change addressed mainly to companies and industries. We should rather think about it as a cultural concept: as an opportunity to rethink our ways of life, to change these in innovative ways and to sow a few conceptual seeds for a possible transition towards a more sustainable society. The main points of this article, then, are about the challenges of integrating this concept in Dutch society and proposals on the social conditions needed to achieve this goal.

It is usually said that studying a foreign country or a foreign culture enables one to see one's own situation more clearly. This is why the vigilant reader will certainly notice that – to a certain extent – the following text says as much about France as about the Netherlands – even if not so explicitly for the former.

The environmental issues

With regard to climate change, the rising sea level will of course be a major concern in the Netherlands, but the increasing intensity of rains and storms and the development of new species, among others, should not be underestimated either. These ecological threats are well known. For instance, 'resilience', which means the ability to resist a shock and to overcome a crisis, is no longer only a motto but an important political concept which frames policies intended to tackle important ecological threats. Unfortunately, the possibility to provide forecasts is mainly a form of technical fix. To be truly effective, adaptation should be first of all a socio-political movement. It seems to me, however, and to numerous other observers, that both Dutch companies as well as the

government are more concerned with business and competitiveness than with regenerating a lively socio-economic debate. A technology-based adaptation would create more activity for the old and heavy industrial sectors, but it would cost more resources and more energy as well: building more infrastructure, buying new equipment, using more energy to compensate for the changes, and so on. As the resources of the Netherlands are scarce, this is a problem and the country has to rely on international markets or its neighbour's solidarity (including the EU).

The economic and cultural issues

For hundreds of years, the Netherlands has been a major promoter of international trade, and has acquired the economic position of gateway to the heart of Europe. This 'structural situation' is a benefit as well as a problem, as commerce and industry have not only been vital for the country's economy, but they have also shaped institutions and people's expectations. The country's economic strategy and its culture have adapted to this particular geographical situation over the centuries, with quite a lot of success. As we all know, the process of land reclamation started during the sixteenth century, and commerce became a major activity for the country, making Amsterdam the first truly global trade hub in the world's history and today's Randstad area one of the regions most integrated in the world economy. The outcome of this trade-based development model can be seen as very positive. It brought wealth and prosperity to the Netherlands, a country which is nowadays one of the richest and most densely populated in the world, and home to numerous ethnic, religious and cultural communities. However, we know today that international trade is a major driving factor for emission of greenhouse gases, and also has a negative impact on the environment more generally. It would be futile to begin a serious discussion here on this specific topic, but we shall simply recall that the IPCC and many specialists argue that an increase in global trade would be very bad for the ecosystem. But are the Dutch ready to promote a less trade-intensive world? Even if important steps could be taken to adapt the economy – and this part of Europe could theoretically be self-sufficient in both food and energy – some changes in the culture should be expected as well. Behind this issue lies indeed the bigger question of the country's identity. Trade and industry (including services) are essential to sustain the country's lifestyle. The possibility of radical changes in long-term conceptions of 'what makes the country live' raises the problem of how the Dutch people see themselves and their position in the world, and what changes in their everyday work, consumption and community culture they are ready to accept and put into practice.

The circular economy as an opportunity for cultural change

The circular economy seems particularly suited to the Dutch situation, because the Netherlands are without doubt a very densely populated country which has been shaped by humans to an enormous degree. Hundreds of years of land transformation have made the highly characteristic landscape what it is today. Renowned urban and regional planning policies are in place up to the present. It is also one of the major industrial countries, with an amazing concentration of plants, regional or international headquarters, research labs and universities, and most importantly, highly qualified and educated people. So, more than any other Western

country, and for a longer time, the Dutch authorities and companies have understood the importance of ecological (or systemic) thinking (even if they have not always respected it) while considering how to design, transform and manage their environment. Some old practices – which would nowadays fall under the concept of circular economy – have been implemented a long time ago, with regard to water management for instance. The situation is therefore favourable to move forward.

Nevertheless, the gap between consensus on concepts and real actions should not be underestimated. The circular economy might indeed be a very nice and new concept which is – to a certain extent – suited to the problems we face. Like numerous political slogans, however, it is very broad, fuzzy and unclear and it contains a certain amount of contradictions and mysteries, which helps it reach a large and varied audience more easily. Thus, its main goal is to change behaviour, to get people to question and think, bring different people together and inspire them to collective action. To do this, this concept cannot be left as it is; it has to be translated into new and relevant ways of behaving.

A basic strategy for socio-cultural change

Of course, laws and technical standards are appropriate devices to regulate the economy, industry, technologies and even our lifestyle. They work at the scale of a whole society and are supposed to create unavoidable constraints and incentives, for instance, with regard to industrial change. But, on the other hand, what about the everyday small, trivial actions we do all the time? There are so many of them in every situation and they are so trivial that people usually even tend to stop recognising them. The problem here is that these practices are deeply rooted in our body and mind. Distinguished scientists have shown how much most of our everyday actions rely on tacit knowledge (including at work). As such, reflection and rational calculation are minor phenomena in the middle of an ocean of emotions and habits. So, someone who wants to apply the 'big concept' of circular economy in his or her very personal everyday practices (at work, at home, on the street, when you drink water…) should find a relevant strategy to bridge these two things and find sufficient motivation to learn again how to behave in accordance with the new principles. Creating innovative cultures that link theories (ideals) and practice (actions) is not a new problem, but in the case of the environmental transition, we seem to face this problem at a whole new scale.

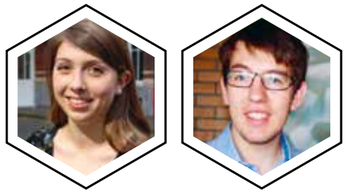
The main challenge is the enormous diversity of situations that different people encounter every day. There are ways to work towards finding common structures in diversity, i.e. to bring about some small, local as well as general social changes. For instance, there are at least three types of 'tricks of the trade' commonly used in everyday political and social life to trigger a change in people's behaviour:

- Reframe, invent, negotiate new ideals: because dreams power desires, and those are one of the most universal driving forces of human beings, it is part of human nature to have a goal; these can be designed collectively, but they should be attractive enough and realistically achievable.
- Negotiate, decide, design with everyone's position taken into account: because there are always differences of interest, and dialogue and controlled confrontation make it possible to reach a legitimate distribution of burdens and benefits in the new situation.
- Maintain, guarantee, secure what really matters for people: because fear of the future is usually one of the main obstacles to change, credible guarantees and compensations enable people to be sure that what really matters to them will be maintained or that they will receive support in dealing with the most important changes in their situation.

These tricks can help foster an open political debate about the practices that could help translate some of the circular economy's catchphrases into cultural change. This could even contribute to the creation of virtuous conditions that would help effect small but practical changes in people's culture, showing the relevance of these changes and facilitating their generalisation.

Concrete projects and solutions

Interview CapGlobalCarbon



MARIE PEREZ AND ERIK-JAN VAN OOSTEN

Last December, Erik-Jan Van Oosten, a young Dutch student in Urban Environmental Management at the University of Wageningen, had the honour of attending the Paris Climate Conference COP21. 'It was amazing to be able to present an idea I believe in at such a high and important level', he recalls. This idea is called *CapGlobalCarbon* and aims to create a progressive tightening cap on fossil fuel extraction.

How would it work? First, a Global Climate Commons Trust would be established by NGOs and citizen groups. Then, based on the advice of climate scientists, the Trust would decide on the safe amount of fossil fuels that could be extracted each year. This quantity would then be reduced each year to cut our greenhouse gas emissions. Extraction permits would be distributed through a global auction, where they would be sold to the extraction companies. Finally, the net proceeds from the auction would be distributed directly to people throughout the world in equal shares, thus contributing to social justice. According to Erik-Jan, 'it is a bold and big idea but at the same time, it is a less complicated and political approach of climate change than the one of the IPCC (Intergovernmental Panel on Climate Change).'

The project was born during a brainstorm weekend hosted by the Irish think tank Feasta (Foundation of the Economics of Sustainability) which brought together people from the United States, France, Netherlands, Ireland and the UK. It transcends national borders, looks at the bigger picture of climate change, and tries to solve it in an innovative way, which was also the approach of the Young Talents Meeting.

Erik takes care of the website and promotion of the project. What he and his fellow founders now want is for the project to evolve from an academic idea to an established institution with popular support. 'I hope some countries are willing to take the lead in adopting a carbon cap as a way to price carbon, and that we will have a global cap in place before it is too late', says Erik.

The next generation of bioethanol

CHLOÉ BENNATI-GRANIER

As a PhD student, I am working on new fungal enzymes to improve biomass hydrolysis in the context of second generation bioethanol. The first generation of bioethanol is a contested process. It is in direct competition with the food sector by using corn and sugar beet as its main resources. The second generation of bioethanol aims at using the most abundant and renewable source of biomass on earth: lignocellulosic biomass (wood and plant culture). My work is deeply related to the theme of 'a sustainable transition towards green growth'. The world of scientists is not always accessible to the larger public, and I would precisely like to show this unfiltered version of my work by using my specialist vocabulary. The understanding of the enzymatic degradation of lignocellulose has progressed enormously in the past few years, especially due to the identification of a new class of fungal-secreted enzymes, the lytic polysaccharide monooxygenases (LPMOs), which enhance cellulose conversion. As a PhD student I investigated a set of AA9 LPMOs identified in the secretomes of the coprophilous ascomycete Podospora anserina, a biomass degrader of recalcitrant substrates. It provides insights into the mode of cleavage and substrate specificities of fungal AA9 LPMOs that will facilitate their application in the development of future biorefineries. It looks complicated, but I am convinced this research will help in developing low-carbon energy, reducing the pollution of air, water and soil, optimising the use of natural resources and creating a more stable economic model by preserving social goods.

Ecology in agriculture – the environment is everything

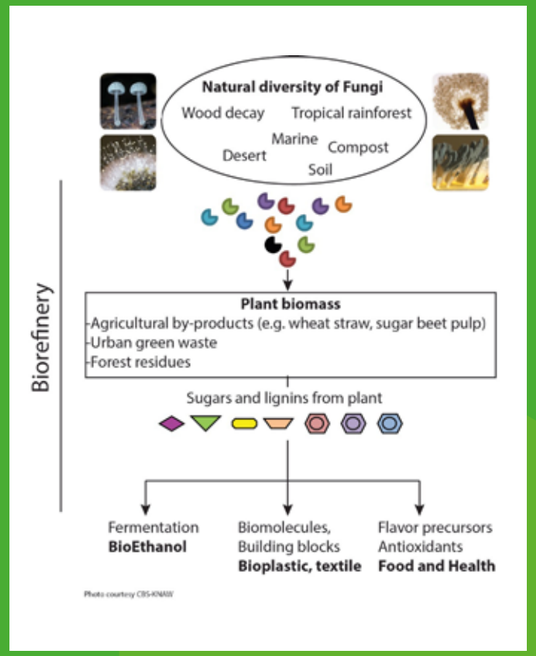
JASPER WUBS

A sustainable human society requires major transitions. The role of ecology is fundamental, especially in agricultural production systems, which are really agro-ecosystems. The central insight in ecology is that the environmental context determines the outcome of species interactions. This context will be crucial when agricultural production can no longer rely on fertiliser and pesticides as much in the future. However, exactly how species interactions change in response to changes in the environment is largely unclear, particularly with regard to the soil. There is therefore a real need for ecologists and farmers to team up and study how agro-ecosystems behave across the globe, in order to identify the type of management best suited to each particular place. This was the central message of the cross-disciplinary conference on *Ecologically intense agriculture* (KNAW, April 2015) I co-hosted in Amsterdam. The next challenge is to address the influence of environmental drivers on key species interactions across the Earth's major biomes using the same experimental methods.

Fungal technology

ISABELLE BENOIT-GELBER, APRIL J. M. LIWANAG, JOSHUA LAMBERTUS*

Isabelle: Fungi are fascinating organisms, which are able to grow in various environments. They are essential for decomposing plant matter such as trees in the forest, but they can also degrade man-made objects like CDs. In our research group, Fungal Physiology, we use their properties in the context of biotechnology. We are interested in the transformation of plant biomass into simple sugars and aromatic molecules and the valorisation of these substances. The sugars are further fermented into bioethanol, and the aromatic molecules are used in the cosmetic, food or health industries.
The various steps of the different processes require different fungi with particular properties and are addressed by team members with complementary expertise:



April: Sustainable Biomass Conversions by Highly Efficient Catalytic (SuBiCat) is a European collaborative consortium between chemists, microbiologists and engineers with the aim of facilitating the transition from a fossil fuel-based society to a society based on clean and sustainable conversions of renewable feedstocks. As a SuBiCat PhD student, I study how fungi convert aromatic polymers, such as lignin, into a source of energy and chemicals. I apply an adaptive evolution approach to create a fungus able to degrade better lignocellulose materials. This method is based on the genome plasticity of fungi and their ability to adapt to new environments, in this case a lignin-enriched substrate. Selective and non-selective depolymerisation of the lignin will result in more simple aromatic molecules with interesting properties for biomaterials.

Joshua: My project focusses on fungal cellulases, a class of enzymes that break down cellulose into simple glucose. Cellulose is one of the major plant components. The glucose is then fermented into bioethanol in biorefinery plants. I look into the fungal diversity to find cellulases that are stable and can work fast at high temperatures. In the near future, I would like to see a more circular energy process at a local scale. Cities could have their own biorefinery platforms and produce bioethanol locally for consumers. The collection of urban green waste and compost would contribute to the supply of plant biomass.

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April J. M. Liwanag, PhD fellow EU-ITN SuBiCat, CBS-KNAW Fungal Biodiversity Center, Fungal Molecular Physiology, Utrecht University.
Joshua Lambertus, Master's student, Science and Business Management, Utrecht University.

Conclusion

Crafting a full circle society

Transition towards sustainability as an intergenerational challenge

PROF. JONKER, RADBOUD UNIVERSITY NIJMEGEN

In 2015, the 12th edition of the Erasmus-Descartes Young Talent Program took place in Amsterdam entitled ‘Green Growth and Ecological Transition’. The young people who engaged in this program expressed their eagerness to create desperately needed societal change. Their words are used here to portray the role they are willing to play, now and in the future.

The challenge

We live in a society characterized by turbulent change. The classical growth imperative is put to the test while we rapidly discover the disadvantages. This is not a matter of getting things back on track with some quick fixes. People experience fear about the future and have the feeling that they are not heard in decision-making processes. Our own lives and futures are at stake here. What is needed is a massive movement towards transition. However, the established practices hinder what needs to be urgently done. It is not a matter of replacing one concept of growth by another. Transition means to change the way we have fundamentally organized things. We need not merely look at routines and practices but at the systems, the economic ecologies, the way we make decisions, and how we engage with one another across time and place and between those of different ages. As a consequence, we need a two-phase movement, one that moves from a linear to a circular economy and then, but maybe simultaneously, to a circular society. Making this transition is not a pure technical challenge but a mental-societal one. This change cannot simply take place by those in power but requires the involvement of people in society of all different ages and in various places. Young people across nations are willing and capable to play their active role in this transition. Many young people are full of ideas and ready to play their role in real-life decision processes. The question is if decision makers will allow them be fully involved in our current system to help them adapt it. This requires change from within and making an impact through connectivity and enhancing collaboration across generations.

The Erasmus-Descartes Young Talent Program ‘Green Growth and Ecological Transition’ shows how eager and willing young people are to help create the needed change in society.

The power of being young

However, it will – it needs to - change according to the young people that had the honor and courage to participate in this challenging inter-cultural meeting of minds. The level of ambition as displayed on the COP21 by many world leaders demonstrates that, finally, the climate is being given more priority. It will be an enormous task to translate these goals and ambitions into real societal and organizational impacts. Many of the young people of this world have understood this message and are more than ready to roll up their sleeves and take on the challenge to create genuine and profound change. Change that is, of course, systemic and technical but also, and maybe before anything else, behavioral. If we truly want to address current problems and especially prevent further environmental disturbances, we should focus on the very core of the issues at hand: ourselves. We have become out of touch with how we take part in these systems, and we actually think we are not responsible for our choices, however, we are. Many of our flawed choices are the result of not being aware of the bigger picture. Awareness of the system allows making a better choice and reducing our impact.

Inclusive action, inclusive change

How do we know that we are making progress in transitioning to a more sustainable society? To make it successful, national and international governments should establish clear goals with a long-term perspective rather than changing their policies from year to year. As a result, companies as well as local communities can make long-term plans to incorporate these governmental goals without taking the risk that investments become useless after a few years due to changing policy. Having a clearer long-term perspective would thus create more trust in the government and a higher willingness to participate.

However, maybe we should go one step further and not even speak of a circular economy. Instead, we should be talking about a circular or inclusive society. In the end, a circular economy is about making what is generally considered as waste in one respect, useful in another aspect. It is all about materiality and not about the social or the behavioural side of what needs to change. In a circular society, we examine the bigger picture and also include people’s behaviour based on knowledge of this system. In such a society, this awareness of the system allows us to make better choices and, therefore, reduce our impact. We can improve the world in doing so.

Through rewarding and praise green initiatives, decisions and behaviour on a personal and professional level and following the progress in transition not solely in quantitative and economic terms but also in personal terms, we broaden the concept of a circular economy to one encompassing society. In doing so, we can truly make progress from a linear, consumptive society to a more educated, sustainable civilization. The young people enrolled in this exchange program should take a glimpse of the immediate future they have in mind and the roles they are willing to play. That is encouraging since, with the investment of their time, energy, and intellectual creativity, real change is just around the corner.

(Jan) Jonker is professor of Sustainable Development at the Nijmegen School of Management at Radboud University Nijmegen (the Netherlands). Since 2014, he has also held the Chaire d’Excellence Pierre de Fermat at the Toulouse Business School in Toulouse (France). In his home country, he has been listed for seven years in a row among the Top-100 most influential ‘Green’ Dutch people. His research focuses on the implementation of sustainability, (new) business models, and how these developments are related to change and transition. His approach is often based on crowdthinking which implies engaging with large groups of people in specific research projects in order to explore and possibly solve issues as a collective endeavor. As a consequence, many people consider him as a kind of ‘academic activist’ wanting to create change and to have impact. He did a TEDx in the Netherlands in 2015 explaining the central concepts in his work which you can see at: bit.ly/1DJRV8i. He is author of over 30 books among which is a 2014 bestseller on New Business Models. He is currently developing research in the field of business models for the circular economy.

The Young Talent team

2015

ACHMED BOUAYAD

IFP SCHOOL, *PARIS, FRANCE*
MA IN ENERGY ECONOMICS

I have worked as a Reservoir Engineer at Engie, and have also worked for Semaco Environnement on sustainable electricity (hydrogen) projects. This has allowed me to develop different skills in oil and gas, as well as green energies. I do think that 'transition' is the keyword in the energy industry nowadays. While oil and gas remain essential, we should still consider a more sustainable energy mix.

To me, a sustainable transition towards green growth means:

- Creating an appropriate energetic environment
- Sustainable development with broad public participation
- Reducing pollution, which is impossible without green growth
- Economic and social benefits, along with environmental gains
- Growing first, cleaning up later!

AMÉLIE ROUGIÉ

UNIVERSITÉ PARIS DIDEROT, *FRANCE*
MASTER IN ENERGY, ECOLOGY AND SOCIETY
(INTERDISCIPLINARY APPROACH)

While working for the French energy company EDF, I have been studying the perception of risks linked to electromagnetic fields and have also been working with farmers switching from fossil fuels to renewable energies. Energy and environmental issues are the most urgent and critical challenge we currently face as a species, and I want to take on this problem, making the most of my multidisciplinary background.

To me, a sustainable transition towards green growth involves:

- Re-enchanting technological progress and innovation
- Reimagining our relationship with nature and the environment
- Transforming our waste and bringing about a real 'circular economy'
- Rethinking work, job creation, and employment
- Durably transitioning away from fossil fuels

ANNEMIEKE KOSTER

UNIVERSITY OF TWENTE, *ENSCHEDE, THE NETHERLANDS*
BACHELOR IN APPLIED COMMUNICATION SCIENCE
CURRENT PROJECT:
ENSCHEDE TEXTIELSTAD

I am currently working on Enschede Textielstad, an initiative to bring back textile production to the Netherlands. I use a shuttle loom to produce denim and chambray with recycled yarns. In this way, I want to demonstrate that industrial production of textiles is possible in the Netherlands, and that there are local and sustainable alternatives to the way textiles are currently produced. While working on my project, I encounter the topics of this meeting on the ecological transition and green growth on a day-to-day basis.

AURÉLIEN BRUEL

TROYES UNIVERSITY OF TECHNOLOGY, *FRANCE*
PHD IN ENVIRONMENTAL SCIENCE / ENVIRONMENTAL ENGINEERING

Industrial ecology is a new sustainable industrial model aimed at optimising exchange between companies and eco-design of products. By showing its financial benefits, my PhD aims to convince decision makers to turn to clean technologies and implement incentive tools to pass from current industrial systems to circular ones.
From a young age, I have been aware of environmental issues. Through internships and my experiences abroad I discovered different models for a sustainable transition, such as agroecology and product-service systems. My will and perseverance to work towards making our activities sustainable led me to my current field of research.

To me, a sustainable transition towards green growth means:

- Involving every stakeholder in society
- Realising an ecologically/ economically resilient society
- Focussing on renewable energy and conservation
- Making sure employees are engaged in the governance of organisations
- Moving towards industrial ecology and product-service systems

BLANCHE LORMETEAU

UNIVERSITÉ DE NANTES, *FRANCE*
PHD IN HEAT AND LAW

During my PhD, I explored the legal aspects of energy and heat through the notion of exergy, among others. I believe this legal basis can contribute to a more rational use of energy, based on ecosystemic balance, which is indispensable in ensuring the continuation of global growth.

To me, a sustainable transition towards green growth means:

- Environmental justice, a change of energy governance
- Fighting against instability and energy dependence
- Adaptation to climate change
- Rational use of natural resources – principle of exergy
- Technological innovation

CHARLOTTE SEDEREL

RADBOUD UNIVERSITY NIJMEGEN, *THE NETHERLANDS*
BACHELOR IN SOCIOLOGY & BUSINESS ADMINISTRATION
EUROPEAN MASTER IN SYSTEM DYNAMICS

In the course of my master's programme in System Dynamics Modelling, I learned of the 'Club of Rome' and its use of system dynamics as presented in their book 'Limits to Growth'.
I am working on a modelling project on the Dutch dairy industry, and my present questions are:

- How can we shift our focus from the continuous growth of GDP that is currently leading most of our policies to more sustainable growth?
- How can a more equal society and a reduction of working hours contribute to a more sustainable lifestyle becoming mainstream?

CHLOÉ BENNATI-GRANIER

AIX-MARSEILLE UNIVERSITY, *FRANCE*
PHD IN BIOCHEMISTRY AND BIOTECHNOLOGY

As a PhD student, I am working on new fungal enzymes to improve biomass hydrolysis in the context of second-generation bioethanol. My work is strongly related to the theme of sustainable transition towards green growth, and I hope that my research results as young talent will positively contribute to this transition.

For me, the transition towards green growth means:

- Developing low-carbon energy
- Reducing air, water, and soil pollution
- Improving access to energy
- Optimising the use of natural resources
- Creating a more stable economic model by preserving social goods

DIEUWERT BLOMJOUS

UNIVERSITY OF TWENTE, *ENSCHEDE, THE NETHERLANDS*
BACHELOR IN CIVIL ENGINEERING

During my studies in Civil Engineering I have learned about construction projects, water management and traffic management and realised that designing a building is not just making sure the building doesn't collapse; that solving problems with water scarcity implies an ongoing dialogue with stakeholders; that reducing traffic jams is not just building a new road.

In designing a building today, one major aspect is using energy in a more environmentally friendly way. Likewise, many solutions applied in cars or traffic systems can make a difference in energy use. But one crucial questions remains: are drivers willing to change their behaviour?

Having already learned a lot about different aspects of sustainability, such as techniques, behaviour and stakeholders, I am eager to discuss this with students from other fields and even more so with those from a foreign country.

ERIK-JAN VAN OOSTEN

UNIVERSITY OF WAGENINGEN, *THE NETHERLANDS*
MASTER IN URBAN ENVIRONMENTAL MANAGEMENT

During an internship at the Irish Think Tank Feasta, The Foundation for the Economics of Sustainability, I became interested in economic sustainability and the environmental dimension of growth. My thesis concerns green growth as one of the key concepts uniting environmental sustainability with economic growth, and barriers to its implementation.

As a proponent of the Dutch school of transition management as practised and researched by DRIFT and Urgenda, I believe it is crucial to radically green the economy to avert dangerous levels of climate change, and that an orchestrated, global effort is needed to green the world's economy before it is too late. For the Climate-KIC master label I worked on the creation of a disruptive business plan, in which the stimulation of entrepreneurship plays a major role.

During the Young Talents meeting I hope to connect with likeminded people who are interested in and capable of making a serious positive environmental impact. Especially with the COP21 coming up, this is a crucial time for my generation to build a new, sustainable economy.

GAËLLE AUDRAIN DEMEY

UNIVERSITÉ DE NANTES, *FRANCE*
PHD ON SPOILED SOIL AND THE RIGHT TO PROPERTY

Part of my PhD project in environmental law focusses on the legal side of the ecological transition: on its forms and manifestations, techniques to foster it and ways to avoid legal barriers it may encounter. Outside of my work, I am deeply involved in associative networks aimed at promoting environmental law and raising awareness regarding sustainable development.

To me, a sustainable transition towards green growth is:

- A new method for an older concept: sustainable development
- Adapting property rights to protect natural resources
- Developing investment in sustainable energy and environmental research
- More ecological solidarity and environmental governance
- Supporting sustainable use of natural resources

BAUDRY, GINO

UNIVERSITÉ DE NANTES, *FRANCE*
PHD IN ECONOMICS OF ENERGY AND CLIMATE CHANGE

As an Economic Development Officer for Renewable Energy, I develop projects that promote green growth, i.e., offshore wind power. I am currently working on my PhD in Energy Economics, which focusses on the deployment of microalgae for biofuel.

For me, a sustainable transition towards green growth means:

- Harmonising economic growth with both environmental sustainability and social justice
- Fostering international cooperation for improving public goods management
- Promoting a low-carbon economy
- Increasing international green technology transfer
- Achieving better income redistribution to reduce inequality and eradicate poverty

GUUS THIJSSEN

UNIVERSITY OF AMSTERDAM,
THE NETHERLANDS
BACHELOR IN HUMAN GEOGRAPHIES
CURRENT PROJECT: COMMON AGRICULTURAL POLICY & WHAT'S COOKING FOR SLOW FOOD YOUTH NETWORK

I am currently working on a project to get more young people interested in the Common Agricultural Policy (CAP). Throughout Europe we organise open farm events and publish a book about the role the CAP plays in consumer's and farmer's lives. Biodiversity and the role of greening in the CAP are amongst the issues discussed in the project. I am involved in many aspects of the Slow Food movement, where protecting biodiversity plays a vital role. Here, I focus on working with chefs who make an extra effort to use particular ingredients and tell their stories.

JASPER WUBS

NETHERLANDS INSTITUTE OF ECOLOGY (NIOO-KNAW) WAGENINGEN,
THE NETHERLANDS
PHD IN ECOLOGY (PLANT & SOIL)

I am an ecologist interested in applying my basic understanding of ecological systems to agro-ecosystems and landscapes on which we all depend. In my view, a major change in consumption patterns and land use (biodiversity, soil management, etc.) is critical for the sustainability of human society. Human production and consumption needs to be based on sound ecological understanding of short- and long-term system feedbacks.

My focus is on:

- the interplay between vegetation and its soil microbiome and using this knowledge to restore natural landscapes;
- a food forestry project as a real-life demonstration of alternative agroecological practices applicable to urbanised landscapes.

JÉRÉMIE JOUBERT

TROYES UNIVERSITY OF TECHNOLOGY,
FRANCE
PHD IN INDUSTRIAL ECOLOGY AND SUSTAINABLE BUILDING

I believe achieving a sustainable transition is the greatest challenge of our time. Through numerous lectures and travels throughout France I have met researchers and professionals who inspired me to write a master's thesis on industrial ecology, move to a technological university focussing on environmental engineering and start a PhD project on public policy in industrial ecology intended to foster a sustainable transition in the building sector. Besides my research I work for a European student's association called 'Munich European Forum e.V.' (http://europeanforum.de).

To me, a sustainable transition towards green growth involves:

- Changing everyday practices and underlying mentalities to minimise social and ecological damage
- Using fair rules, creating dialogue, reassuring the poorest and taking into account a plurality of interests
- A 'complex' way of thinking that takes into account the interconnectedness of things in this world
- The use of biomimicry to inspire more adaptive services, goods and biotechnologies to allow a more sustainable production of materials and energy
- Accepting that information technologies allow citizens to self-organise, allowing for changes in consumption, family, housing, working standards, mobility and education.

KIRSTEN VAN REISEN

LONDON SCHOOL OF ECONOMICS AND POLITICAL SCIENCE, *UNITED KINGDOM*
MASTER OF SCIENCES IN HEALTH, COMMUNITY & DEVELOPMENT
CURRENT PROJECT: CONSULTANT FOR CLIMATE PROGRAMMES OF 12 DUTCH MUNICIPALITIES

I am currently working for a consultancy in the public sector (Andersson, Elffers, Felix). We are analysing the climate programmes of 12 middle-to-large Dutch municipalities, in order to advise them on how to achieve an energy-neutral position in time (or faster) and how to involve their citizens so as to create momentum.

LAWRENCE CHEUK

AVANS UNIVERSITY OF APPLIED SCIENCES, *DEN BOSCH, THE NETHERLANDS*
BACHELOR IN PUBLIC MANAGEMENT & ADMINISTRATION

As chairman of the Dutch branch of the Young Friends of the Earth network *(www.jma.org), I represent the Dutch youth on environmental issues and share ideas towards a sustainable transition with like-minded people throughout Europe.*

Our JMA team attends and/or organises different kinds of events. The yearly 'Underwear Run', where around 100 young Dutch people run through Amsterdam in sustainable underwear to raise awareness for cotton with high criteria in terms of social and ecological impact and quality is one fun example of how we get media attention and mobilise young people.

Our latest project, the Treaty for Sustainability within Education, aimed not only to improve education on sustainability but also for education itself to become sustainable. The treaty obtained the support of the majority in the Dutch House of Representatives, and therefore had a tremendous impact in our country.

LOTTE PRONK

UTRECHT UNIVERSITY, *THE NETHERLANDS*
BACHELOR IN BIOLOGY

I am a biologist interested in how biological knowledge can help make our way of living more sustainable. One of my course projects concerned the microbiome of the water fern, Azolla. This plant can be used for biomass production, and it also produces certain useful chemicals. It can be grown in water basins and does therefore not compete with food crops for arable land. I also contribute to the website www.urban-biology.com and have gained insight into the relationship between humans and nature. I am co-author of an article about the use of biomimicry to design more sustainable buildings. It shows that a more sustainable world can only be achieved by stepping outside the boundaries of your own field and by using a multidisciplinary approach.

LUUK ORLANDO DE VRIES

UNIVERSITY OF TWENTE, *ENSCHEDE, THE NETHERLANDS*
MASTER IN SCIENCE EDUCATION & COMMUNICATION
MASTER IN TRAFFIC ENGINEERING & MANAGEMENT

I gained experience on sustainable mobility issues through following lectures and courses related to sustainable transport and as both a traffic designer and a mathematics teacher.

Not everyone is a professional; we academics tend to forget that there is a whole world of people who have completely different motives in choosing their day-to-day mode of transport. And we are also confronted with a huge healthcare crisis regarding obesity. Not only in France and in The Netherlands, but all over the world!

It would be a real challenge to incorporate healthy growth in the transition towards green growth (because exercising is FUN!). Take the bicycle instead of the car! Walk to the train station instead of taking the bus! A vision which I already implemented in my bachelor's thesis redesigning a major street in the centre of Enschede. This asks for a change in eco-mobility, as wel as in agriculture, ecological urbanism, education and other professions! To solve this challenge, we as engineers and young professionals should use our ingenuity to come up with solutions for green growth that is both healthy and sustainable.

MAËL JAMBOU

UNIVERSITY OF TECHNOLOGY TROYES, *FRANCE*
PHD IN INDUSTRIAL ECOLOGY

As a student, I realised that we need more than 'green power' alone to accomplish a true sustainable transition. That is why I am developing a set of tools and strategies that chart the way ahead as part of my PhD. I am working on industrial ecology, studying the flows of materials and energy in industrial and consumer activities, as well as the use and transformation of resources.

To me, a sustainable transition towards green growth means:

- HDI (human development index) instead of GDP (gross domestic product)
- A social transition, above all
- Accepting that technology cannot solve all problems
- 'Everything must change so that nothing changes' (Guiseppe Tomasi di Lampedusa)
- The future of humanity as a whole, and not the concern of only a few people.

MARGOT HOUWERS

UTRECHT UNIVERSITY, *THE NETHERLANDS*
MASTER IN GEOLOGY – EARTH'S STRUCTURES & DYNAMICS

I study Earth Sciences, and I have a passion for the development of renewable energy sources. My master's programme focusses on geothermal energy, which has great potential as an energy source. To join the Young Talent team this year is a fantastic opportunity to participate in discussions about sustainability in the future and to learn about the social aspects of this issue.

My experience in geothermal companies and insight into the fossil fuel industry will allow me to contribute to the debate with interesting input.

MARIE PEREZ

ÉCOLE SUPÉRIEURE DE JOURNALISME DE LILLE, *FRANCE*
MASTER IN SCIENCE JOURNALISM

As an engineering student, I chose a lot of classes dealing with renewable energies, green building and eco-design. The questions that interested me most in science also made me adapt my own lifestyle. It even motivated me to become a science journalist in an attempt to raise public awareness. As a millennial, being concerned about sustainable development is almost encoded in my genes, and now it is time for others to wake up and smell the coffee.

To me, a sustainable transition towards green growth means:

- Switching to renewable energy sources
- Learning to store energy
- Reducing our consumption of meat and fish, and using local produce
- Banning the dangerous pesticides and chemicals used in the industry
- Improving public transport and making it more accessible.

MARLEEN LODDER

DUTCH RESEARCH INSTITUTE FOR TRANSITIONS, ERASMUS UNIVERSITY ROTTERDAM & ROTTERDAM SCHOOL OF MANAGEMENT, *THE NETHERLANDS*
PHD IN ARCHITECTURE, BUILDING AND PLANNING. SUBJECT: TRANSITION TOWARDS BENEFICIAL (C2C) AREA DEVELOPMENT

My PhD thesis combines both a Transition perspective and a Cradle to Cradle perspective into a single framework to achieve Beneficial Area Development. The aim is to develop urban areas in such a way that they create more social, cultural, ecological and economic benefits than they consume, on an increasing spatial scale. This approach is based on exploring opportunities and co-benefits by focussing on effectiveness (instead of efficiency) through a (selective) participatory process based on the transition management process (Loorbach, 2007).

MORGANE SCHUHMANN

IFP SCHOOL, PARIS, *FRANCE*
MASTER IN ECONOMICS OF ENERGY

During my Master in Environmental Studies at Paris 11 I studied environmental issues, economics of environment and sustainable development. I now study Economics of Energy at the IFP School.
Green growth is a compromise between sustainable development and reaching a steady level of economic growth. As the COP 21 is approaching, green growth will be a major issue for the early decades of this century.

I truly believe in sustainable development, and am already taking part in it: I have worked at SUEZ Environment in Hong Kong for six months, where I focussed on waste-to-energy projects and different ways of recycling waste and water.

To me, a sustainable transition towards green growth involves:

- A compromise between sustainable development and economic growth
- A green economy: recycling of water and waste
- A reduction of greenhouse gas emissions
- Achieving social progress
- A sustainable mode of consumption and production.

NICOLÁS LARRAÑAGA LAPIQUE

UNIVERSITÉ PARIS-SACLAY, *FRANCE*
MASTER IN ECONOMY, SUSTAINABLE DEVELOPMENT, ENVIRONMENT AND ENERGY

To achieve green growth, we must develop new environmentally friendly ways of using and generating energy. We also need a change of mindset, and possibly even need to redefine the concept of economic growth itself. As an energy engineer and economics student, I believe both technical and social knowledge is needed to deal with the impending problem of global warming.

To me, a sustainable transition towards green growth means:

- Affordable energy for everyone (energy as a human right)
- Our economic growth cannot impact the climate
- All countries have the same right to achieve green development
- Accepting that this transition is imperative, and not a choice
- Improving green technologies independent of other energy sources.

OLUWAFEMI OJAMBATI

UNIVERSITY OF TWENTE, *ENSCHEDE, THE NETHERLANDS*
PHD IN PHYSICS

Solar energy research has gained increased support from academia, industry and the government, due to the quest for sustainable and eco-friendly renewable energy sources. Solar energy research aims at improving conversion efficiency as well as minimising the cost of production. This is the goal of my PhD research.

My aim is:

- to increase the amount of light absorbed inside photovoltaic devices using a novel method (wavefront shaping);
- to quantify this increase;
- to use this increase in the light absorbed to increase the efficiency of commercial solar cells, in order to support a sustainable transition towards green energy.

OSCAR WIDERBERG

INSTITUTE FOR ENVIRONMENTAL STUDIES, VU UNIVERSITY AMSTERDAM, *THE NETHERLANDS*
PHD IN GLOBAL ENVIRONMENTAL GOVERNANCE

I engaged with climate issues at UNFCCC and OECD meetings.
I believe that what is required to create a sustainable transition towards green growth includes:

- a redefinition of human well-being leading to the decoupling of economic growth from environmental degradation;
- a democratic and inclusive transition to decrease inequalities in human well-being;
- a form of political and economic governance that fosters experimentation and innovation;
- a form of global governance that promotes accountability for one's actions;
- a recognition that there will be winners and losers in the transition and the courage to break the status quo.

ROB TERWEL

UNIVERSITY COLLEGE UTRECHT, *THE NETHERLANDS*
BACHELOR IN PHILOSOPHY & HISTORY
BACHELOR IN CHEMISTRY & PHYSICS
CURRENT PROJECT: JUNIOR RESEARCHER AND MODELLER AT QUINTEL INTELLIGENCE

I am currently active at Quintel Intelligence, a Dutch think-tank which has developed the Energy Transition Model (ETM). The ETM is an independent, holistic open source model which allows one to create, compare and evaluate scenario's for energy systems.
On the one hand I help develop the model, modelling complex technologies like hybrid heatpumps as well as entire infrastructures for carriers such as hydrogen.

On the other hand, I work on external projects, modelling, monitoring and evaluating plans made for a Dutch province's Energy Agreement, as well as carrying out research and joint investigations on how our industry could change given a transition to a low CO^2 society.

ROOS VAN DE KRAATS

UNIVERSITY OF WAGENINGEN,
THE NETHERLANDS
MASTER IN FOREST AND NATURE CONSERVATION

I study how businesses impact nature, especially in terms of ecosystems and biodiversity, and how businesses are dependent on them. While investigating the current state of reporting on biodiversity by Dutch businesses, I realised how difficult it remains to implement action in favour of biodiversity.

What I learned and think is that:

- there are many ways for businesses to have a positive impact on biodiversity;
- some concrete options should be developed to promote biodiversity;
- above all, it is important to link economy with ecology in a more balanced way to ensure our natural resources are not depleted, to stop biodiversity loss and foster green growth.

STIJN VAN GILS

NETHERLANDS INSTITUTE OF ECOLOGY (KNAW)
WAGENINGEN, *THE NETHERLANDS*
PHD IN AGRO-ECOLOGY ON 'OPTIMISATION OF ECOSYSTEM SERVICES IN AGRO-ECOSYSTEMS'

Crop yields in agriculture depend on pest control, pollination, soil fertility and external inputs such as fertilisation. However, improving soil fertility changes plant chemistry and thus changes the crop's attractiveness to pests. I conduct experiments on how external inputs, pests, pollination and nutrient availability in the soil are related to each other in order to design more sustainable agricultural systems that depend less on external inputs.

The world is in a transition towards a data-based society, with a big potential for sustainable growth. Fully combining different disciplines and worldviews seems urgently necessary to go further.

VALENTIN LEFRANC

UNIVERSITÉ PARIS SUD, *FRANCE*
PHD IN GAMMA-RAY ASTROPHYSICS

As an astrophysicist, my field of expertise is not directly related to green growth. However, my personal convictions and current research are. My department participates in one of the biggest experiments on clean energy: ITER. This project focusses on nuclear fusion, which is the key to long-term green growth in my view. I want to use my knowledge to help create clean sources of energy.

To me, a sustainable transition towards green growth means:

- Lowering the need for fossil fuel
- Employment and fiscal strategy
- Finding new 'clean' building materials and energy-efficient means of transportation
- Helping emerging countries (the ones with actual growth)
- Working within a short time frame.

VICTORIA ROBERT

UNIVERSITÉ DE NANTES, *FRANCE*
MASTER IN ENVIRONMENTAL LAW AND SUSTAINABLE DEVELOPMENT

Impending population growth and declining natural resources are a matter of concern to the general public. However, finding and implementing sustainable solutions requires additional joint efforts. I have studied the interests of and opportunities for governments in exploiting fossil resources (mainly shale gas and oils). On a personal level, I give considerable thought to the sustainability of biodiversity and to the space we grant to animals.

To me, a sustainable transition towards green growth is:

- An imperative for the common good of humanity
- Adapting to the necessities of each nation, not only the developed
- Combining punitive and positive ecology
- Adapting transport and urban structure
- A constant search for innovating methods combining efficacy and frugal use of energy.

YANNIS LAMMARI

TOULOUSE BUSINESS SCHOOL, *FRANCE*
MASTER OF FINANCIAL MANAGEMENT

I did not grow up in a 'tree-hugging' family, but I do want to be an agent of change. That is why I am the President of B3D, an association that offers fun and tangible ways of realising a sustainable transition. I have also participated in multiple conferences and programmes like the latest COP intersession meeting at Bonn and GIZ in Algeria.

To me, a sustainable transition towards green growth means:

- Focusing on normal people in their daily life
- Education and training
- nvolving all parties concerned, even those responsible for the current pollution
- Not only long-term goals, but also direct, positive opportunities
- Taking action now to unburden 'the future generation' (sorry for the historic Brundtland Report definition).

Colofon & Disclaimer

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Royaume des Pays-Bas

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