WorldCafe – Teaching and University Activities – Sessions 1, 2 and 3

**Session 1**

[background conversation]

We should probably make a start. I mean you all have seen the sort of discussions, the text and the questions really for our discussions. So, the thinking behind this is to think about, in broad terms, how we can translate activity or change university activity that would help with this evidence agenda.

[background conversation]

So, I guess, how do you respond, do you agree with the way the questions are framed? Do you think that's a sensible starting point?

I was actually thinking that I should have read the report before we answered these questions. But one of the things that struck me in the discussion earlier, was not thinking in disciplinary silos, is very obvious as a way forward. And perhaps it's about problem and solution-oriented education and research as opposed to field or empirical focus. If that makes sense? I'm not finding the right terminology. But so, I was thinking about it in terms of education first. At university where I am we just started experimenting with integrating sustainably as a goal of education in all of our education programmes, both bachelor and master and postgraduate. And it's proven to be more or less difficult depending on the themes, [04:51] [inaudible] surprising. So, some of the disciples where we expected it to be easy have turned out to be hard, and where we expected it to be hard turned out to be easy. So, it's been very easy in economics faculty, which we were surprised about, and very difficult in the biology faculty, which was surprising. So, we have, I think, something more than disciplines and barriers...

[05:16] [inaudible] surprising.

To me it would be more... The faculties, economics is very much... Economic and Business Administration, so when you talk about sustainability, their model for most of the education is about profit maximisation and how do businesses grow, economic development. And sustainability, requires them also to focus on environment aspects and social aspects which is not tradition in economics as you know. So, you're not talking about macro and micro economic theories anymore, it's sufficient. So, it makes the entire field of economics rethink the basic assumptions. Whereas in biology, faculties are bioengineers, and they're interested in protecting natural resources. Aspects of their research are directly connected to sustainability goals, and yet integrating that into their education programmes was far more challenging. And I don't...

So far I think the assumption is that it's more because of space for people and willingness for people to change, [06:31] [inaudible] the university and faculty management [06:35] [inaudible], so how we really [06:38] [inaudible] with the change, but it's also true... I think that the barriers are [06:41] [inaudible] so we've now developed this new... And I'm not involved in this project, but there's now this new advance master's programme which is designed for students from all of the faculty who engage in master's programmes already, to come together for extra courses that are specifically on sustainability challenges with different theme every semester.

Is it compulsory to do?

No, it's an extra programme that students have to apply to attend and only the best students... It is successful?

Very successful. So, they turn away a lot of students, it is very, very successful. So it is a really high quality programme. But it is researchers and students who are motivated to do it, and that's the easy thing to do, and the hard thing to do is to [07:38] [inaudible]...

Why did you [07:42] [inaudible]?

We don't have the funding, [07:47] [inaudible].

Provided [07:51] [inaudible] both very high [07:53] [inaudible].

So, this is offered for free, but there is a certain budget [07:58] [inaudible].

[overlapping conversation]

It would make sense then to [08:04] [inaudible] successful programme.

I think that's why they're trying to do this two-pronged approach to this specialised training, and at the same time integrate across [08:14] [inaudible] and there's a certain budget for all of this, and [08:19] [inaudible]. But I think what I'm interested in finding out is really what is the optimally [08:27] [inaudible] and we see that it's working, sometimes it is, sometimes not. And something they're good in including our budget [08:37] [inaudible] service and how do we actually make it [08:41] [inaudible].

And Mary said something that takes place in many other universities in Europe. Do you have an idea on [08:48] [inaudible]?

I think most universities have sustainability somewhere in their mission, but whether it's actually integrated into their education.

I mean some of what you described, I mean I won't go into detail, but some of what you described is covered in here.

[background conversation]

So, in this you'll find chapter two, is a whole set of summary of state of the art and current trends, this is of course energy, but it applies if you're after sustainability. And then there's a few, two or three pages, which is called general principles for the successful implementation. And this sets out something like nine or ten sort of structural or political or managerial dimensions that are worth considering when you're trying to do the kind of thing, you're trying to do about getting high level buy­in, about open communication, about engagement of academics and so on. I find it fascinating that you say that barriers are not disciplinary.

Maybe they are.

Well, but I think that's an interesting observation, is that often the barriers don't come from the discipline, they come from how people engage with discipline, or what disciplines means to someone or someone's identity. Or the biologists might say "but we already do sustainability, we don't need someone who's not an expert in biology coming and telling us how to do sustainability." So those are the kind of challenges that it's really difficult...

That's very interesting, sort of identity, that you identify it.

[overlapping conversation]

Of course. Yeah. Well, if you ask any academic, they are sort of, what I call ontological dimension. So, I'll often say to PhD students, "Imagine you hold up a mirror and describe what you see in the mirror". And it's quite an interesting exercise to get them to do that because the vocabulary they use about describing themselves gives you tremendous insight into whether they see themselves, [A], as a competent researcher, or [B], as a member of the academic club. For many, the rite of passage to become a member of an academic discipline is the PhD qualification. But of course, none of that's relevant. You can be highly skilled and relevant in almost any area without necessarily having a PhD. And of course, in academia there are many examples of people that move disciplines and have very successful careers.

So, it's all tied up with a sense of belonging, a sense of identity and a sense of a need to belong to something that gives you safety and protection, so yeah.

So, the fact that [11:46] [inaudible] perspective could help them better design these programmes. If we could understand [11:51] [inaudible].

Yeah, potentially. But that's a real challenge for scientists, because one of the things that I learned when we were developing this, I had a number of conversations with [removed for anonymity purposes]. And one of the things he told me, he said, "If you're trying to represent social sciences from a particular single perspective, that's not gonna work. 'Cause it's all contested." And that sort of opened a window for me as a physicist into a world from a distance I had neatly homogenised and described as a particular way, and of course... So, in the end all we did was appendix C in here we put in some of the SHAPE ENERGY, these 20 keywords that were developed sort of to help give insights from the shape energy programme. But even these are not designed to be sort of robust and positioned, they're just concepts and ideas.

So, within social sciences, to me, it seems much more fluid than the world of physics, because thermodynamics or electromagnetism or gravity or whatever. I mean when you get to particle physics [13:04] [inaudible] the core is the same.

Established.

It's established. And every physicist everywhere in the world will accept those basic laws or tenets as the foundation of the discipline.

And before you were mentioning that you have been involved into designing, interdisciplinary PhD programme. [13:23] [inaudible] Is it mainly STEM purpose or also...

[overlapping conversation]

Yeah, at [removed for anonymity purposes]. It's multidisciplinary, so the idea is we bring together PhD candidates from a range of different disciplines, who are all doing PhD projects related to energy. So it might be wind turbines, it might be smart grids, it might be electric vehicles, solar [13:44] [inaudible], it might be geographers looking at energy and developing context, it might be anthropologists, it might be business people. So, it's deliberately right across eight or 10 academic departments. And effectively what we do is we just create a space where we have a programme of events, workshops, seminars, and site visits, external guest speakers, we have a two-week mini­team project each year.

So, what I would observe is, when you create a formal structure and give it a title, and a name, and put students into it, they suddenly think, "Well, we're expected to do something". And sometimes we tell them what to do and make it explicit, but I would say much of the really valuable learning is implicit, because they have to work out how to communicate with each other. So, the geographer has to communicate with the engineer, who has to communicate with the anthropologist, who has to communicate with the physicist. And implicit in that is that they must learn to respect and value each other's ideas.

So, for me, those are sort of basic fundamental principles. So, I would say that's really important. In the same way, I would like to see policymakers respect evidence and policy. So, it's kind of the same thing, isn't it? So, it's about people saying, "Well, someone has put time and effort into developing this, therefore, I need to try and understand what the value of this is" and sometimes people, for whatever reason, make a positive choice to do that, but sometimes they also make a negative choice which says, "I choose not to respect this position or piece of information because of whatever."

Those are the sort of complexities that we face because academia it's really complex, and you can understand why an early career researcher wants to sort of fit in and belong. So, if you are in very much a discipline oriented environment, you will learn the discourse of the discipline. You will emulate that so that people perceive you as an expert. But then, if you ask yourself the question, "What is the language of interdisciplinarity or multidisciplinary?" That becomes a much more complex question. It's not the language of the expert, is it?

Is that part of the intention behind question two, this idea of communicating evidence, so that it's taken up?

Well, I think so, yeah.

Are you interested...

[background conversation]

Starting at the PhD level or even before?

Well, I'd say ideally it should start before. This document focused on masters and PhDs, but I think the basic principles could apply even at bachelor level.

Because as soon as you start you can let them grow in their way of doing research with a multi-disciplinary thinking.

Yes.

And if you start when they're at the PhD level, they already are disciplinary oriented and they know their methods more or less.

Yes.

And things like that. So, my university for example, the first year, all students are doing topic wise education and they look at one topic from different perspective. So, from an economic perspective, from a cultural art perspective, or a social science perspective. And after this one year they decide what they're going to study, and what is best for them. So, for example, art is interesting, and it has its place, but I'm better in economics, or I'm better in whatever. So, we call it a humble year. And everyone is together. Also, later on when they stay in the same university, they are connected and they can make this interdisciplinary working groups, for example, when they're doing their bachelor thesis and stuff like that, thinking like, "Okay, I know this guy from my humble year, and he has this economic perspective, he can help me to integrate those in my work."

So, I think this is a good thing. And what we also do relating to energy is having a summer school, which includes... We have public officers from the city level and refugees these days, and bachelor students but also activists from NGOs, etcetera, and researchers and they all come together and think about renewable energy and tenable solutions for the region, and how to tackle this, and this trans­disciplinary learning from like this different perspective, and what you were saying before, to learn the perspective, respect them as being valuable. It was the hardest thing because the engineers or the economics, and if they listen to someone who is just passionate about something, it's very hard to make them think that they are equally valuable, their knowledge, and their experience.

Yes.

I think this is also important not just the discipline, it's also if you want to have a policy impact. And the researchers need to know what the policymakers at the city level think, and what are their realities. Because when you look at those who for example energy cooperatives and they're discussing things for the case, now research on universities. And a couple of them, they think like, okay, we're thinking about this issues, and it's the case in our reality and now you're starting research on it, so communication is also important.

No. Yes, I agree. I think what you say about giving people opportunities to look at some sort of practical problem or dimension, whether it's based on the locality of where the university is or even when you were starting out talking about problem based or challenge or case based learning. I think those are very powerful learning tools. You set students a problem and there is no textbook answer. They have to work at it for themselves how to approach a problem and how to interact with each other. And the other thing I find as well is that peer support networks develop and it's quite interesting, because students can then realise that they need to find an answer to a particular question or problem they have, but they're not quite sure to get to the point where they know how to develop the solution themselves, so then they need help and input from others. And I have observed that peer networks can be very supportive and influential in achieving that. And that, for many ways mirrors what life outside university's like, when you have a job or a particular task, you need to find people who can help you achieve those. In the other group, we sort of had a discussion about what we understood by robust policy engagement. What... Any reflections on that? What do you... How does that strike you?

I think there's a huge challenge for research at the moment to... I think there's a fear of communicating because there's a generally hostile environment to expertise at the moment, and I don't know if we have got the tools to overcome it. Robust policy engagement would imply that to me, that we are able to bring the evidence to the table in a sufficiently clear manner that it can be acted upon. And I think we're at the point where we can bring the evidence to the table, and perhaps we think we're doing it in a clear manner, but it comes up against political ideologies that we're not prepared as objective scientists, as researchers. We're not prepared to respond to them, so when people question the basics of a scientific method and clear answer [22:16] [inaudible]... How do you respond, because that's not what you're researching. You're researching...

Yeah. Exactly.

How they act. I think we have... We've seen in media, I think, can we pick up, depending on the media, you can see how politicians say things like, "I don't believe in a hat," where it's a very...

Yes.

Yeah. Exactly.

Which is a very... As a researcher, it's very, "How do I respond to this?"

Yeah. Well, we don't have the tools.

No, we don't. And I think if we want to have robust policy engagement, we need to be able to be trained.

[laughter]

To communicate... I don't have that.

To morph into someone else. To argue on their channels rather than yours.

I don't know, or maybe it's about being brave enough to not have to argue on their terms and to be...To have the confidence in what you are doing that you can say, "That is nonsense what you're saying." I don't know if... I'm not trained, I think, to say, "What you're saying is not good." I don't know. There's some sort of interactions that in these last two years has become far more difficult than where we used to say, "Yeah, we provide the evidence base for your policy making, and the evidence is low in this kind of nice linear fashion," although you could argue that the impact probably... Actually, to say the least. Now there is some sort of pushback that's been very difficult, and I would think... I would love if somebody could give me a nice way to do that [23:50] [inaudible].

I agree with what you say, and [23:51] [inaudible] in politics, but sometimes it can be easier as well. It could be simply about reaching out to policymakers is what we are doing now. With the projects we are... We want to be connections between the policymakers and the researchers and sometimes it's not that the policymakers that wouldn't listen to the researchers but maybe wouldn't have time or their focus on their own jobs, their own activities. And if they can get messages that are based on evidence, that are really simple, they can integrate within their work, or they might have specific questions and they would like to hear maybe about this... What recent research has been and results, so sometimes it's more about really reaching out and connecting with work than... Than it's more simple than someone may think about. It's more about...

That becomes more...

Creating this connection and it should be two ways of course, it's not only... Yeah, 'cause even in this group for... To build the connection with the policymakers, the policymakers have of course, but through relying on what... On the research results.

Do you think that that is a well-worn path in many universities, this reaching out?

No.

No?

Not yet. It's difficult. I think it's also a change of culture, because before you could do your research and publish it.

Yes.

And somehow magically it would be taken up.

Yeah.

Or if it wasn't, it didn't matter. But now...

Yeah, 'cause it was out there.

Now, it's analysts, and I think now is the universities have to be far more proactive. Yeah. Yes.

And we haven't figured it out yet, especially in the communicating [25:27] [inaudible]. I think so. Yeah.

Well, that's interesting, 'cause in the UK we have something called the research assessment exercise. And when it changed from the excellent screen work to research assessment exercise, they brought in this new dimension called "Impact", and impact has completely changed the way that academics view this kind of work. 'Cause effectively as part of the submission, each unit of assessment or university departments had to submit a certain number of impact case studies based on the number of active researchers they have. All of a sudden large departments were looking around for impact case studies and an impact case study is defined as something that has had a broad positive benefit, not in the academic community, but more widely to society or culture or something like that, or engagement with industry. And then these impact case studies, which you can find on the...

In their website, these impact case studies that are effectively sort of a description of the research, and then a description of the impact that the research has. Then that requires academics to go and engage with companies, policymakers, arts, environments, citizens groups, almost anything really. And that has really sort of challenged the paradigm of how universities communicate what they do, to the wider benefit of society, because we're used to publishing in journals and that's been all most academics have done for years. At great cost we should say. Though, I'm not having that argument on that at the moment, but it's... Yeah. I think that's an interesting one, isn't it? How do you equip someone with the skills to go and do that?

But it's also because it's not so really rewarded in the disciplines that you have these skills. I mean, who gets the prize for being the best policy informer or something? So, it's like, everyone should be excellent in your research, you basically have no time. Either you're a charismatic person and you can easily do it, or it's quite hard, you need to learn it. And it's an extra added on responsibility taking on the researchers. And it's a question like, does everyone need to do it? How can we do it, and how can we better reward this time? Maybe it's a new strand of in-between policy and research. And how could we fund this? How could we include this in universities? How can we have intermediary institutions between policy and universities? Maybe, for example, we're now having a new think tank, who's doing exactly that, bridging between what research that's done in a university and how to also kind of explain to the policymakers what we do and have projects exactly on that. But...

Yes.

Think it's not possible a researcher can do this.

Uh­huh.

It's just also a question, should they, do it? And is it... Well, who requests?

I mean, of course, universities [28:49] [inaudible] should do it, and...

But, more fundamentally, who is responsible? Because that I agree and that all takes time. So is it the responsibility of the policymaker to take time to go and find out what's going on in universities? Or is it the responsibility of universities to take time out and go... You need to find somebody that's neutral...

And I'm pretty sure that a policymaker will not really spend too much time on that. Well, exactly, yes, yeah, exactly.

'Cause they're, at the end of the day, they're also interested in driving their agenda based on what their electorate, the dangers of it too, etcetera. So it's probably up to the research community to be able to reach out and that we're saying maybe it's also important to have within the university, some prizes, some tools, some incentives to help this knowledge getting out of it. And kind of staying within the academic environment.

How is it about this... There are these parliamentary scientific advisory groups institutions in some countries. For example, in Germany, we have a scientific institution for the parliament. I think the European parliament as well, and maybe those people should go to the university and also do courses in the masters, so they too get involved and...

Yes.

To add more practical experience.

Yes. Well, I think effectively what we've got are two different groups of people. I think, both of whom would probably recognize the benefits of interacting more, but it's just that it just doesn't really happen. And the challenge then is how you enable, encourage and facilitate the sort of engagement with the wider academic community and more fundamentally, what constitutes evidence. Academics are very good at writing long, detailed, dense reports, or publications, or documents. Politicians want sort of a one-page summary. And academics, I think, are often quite bad at writing one-page summaries of their work.

It's also like cutting your... Like killing your baby when you're...

[laughter]

That's such an instinctive...

Exactly.

Sort of makes sense, for sure, whatever, that's good.

Well, you've put so much effort into beautifully crafting this text. That the last thing we want to do is to sort of cross it out. So, then you need to, I think, enable and train students to think very much about the audience in terms of their publication. In terms of who they're writing for, in terms of what the kind of activity is. I mean, it may be that policy engagement is not necessarily in printed text form. We live in a world now, where even world leaders seem to get their sort of policy evidence from all sorts of media outlets. Anything from YouTube to Fox News, to...

It could be an extra discipline how to communicate when you're out.

Yeah, yeah. Exactly.

In particular, it could be empowering actually.

Yeah, amazing.

Yeah, mass communication is the future. So, all the [32:03] [inaudible].

Yeah, yeah.

Particularly where it's needed.

Yeah, well, things like TED Talks or in the UK, we have something that came from Australia, but it's called the Three Minute Thesis, where you present your PhD in three minutes.

Oh, wow.

That's a great thesis.

Oh, yeah. And it's...

Great innovator.

It's fantastic. Yeah, you look online, Three Minute Thesis it's called. 3­M­T, 3­M­T, and it's a fantastic competition. Because effectively, what these students have, is one static PowerPoint slide, anything you want on it...

Oh, wow.

And they have to stand up and give a three-minute pitch on what their PhD is.

So, the videos are available online?

Yeah, you'll see videos that are [32:44] [inaudible] online.

Is it one slide or...

Well, I'm not sure. If you just search Three Minute Thesis, etcetera...

[overlapping conversation]

It's quite big in Australia, the UK is taking it up, but those kinds of opportunities are fantastic because you if think about a PhD thesis, a hundred thousand words, how do you distil that into three minutes. There was a very famous physicist, Richard Feynman, who died... I'm not sure when he died. He is very well known in physics. He once did this thought experiment. He said, "If the world had come to some terrible disaster, and you could only the communicate one piece of information from this society to the next one, what would you communicate?" So that's like saying, out of all human knowledge what's the most... It's just an interesting thing, isn't it? But often we don't do that. Academics is about: More complex gives you deeper understanding and getting lost in the detail, whereas policy wants the big picture; tell me about it in 30 seconds.

But I think we somehow should stick to the value we have and...

Yeah. Absolutely. Yes.

Keep trying to show that complexity is nothing bad...

No, the world is complex.

And how can we deal with complexity and also for policymakers because if we start doing this three-minute thing, the one minute thing, so many things get lost on the way and we're just trying to fit in the frames where a lot of social science concepts are... Don't fit in and it's not the way they work and for example a lot social science needs to write [34:27] [inaudible] do this paper publishing thing and there are so many things and...

[background conversation]

Yeah, no, but I agree with you... One of the things we say in there is that we must maintain the core integrity of the discipline, but at the same time give the broader perspective. So, this is where the key shift comes in... You've got the breadth and depth of it.

Thank you very much.

Yeah, thank you.

[background conversation]

**Session 2**

Okay, well, welcome everyone, thank you. I guess you're probably worn out having used up all your lunch time energy talking in the other sessions but hopefully, we'll have a good discussion. So, the basic premise of this group was really to think about how universities can support this agenda in terms of preparing, developing skills at bachelor, masters or doctoral level or even early career researcher level to take this agenda forward. So that's really what's set out there and linked to that is a statement that we need to think of the energy system from a much broader perspective as well, so that we're no longer thinking in terms of just technology silos like wind or solar or grid but we're thinking of a holistic energy system. And so then, we have just three questions here that are grouped... Oh it's still going... Are grouped to try and stimulate or encourage discussion, so I'm very happy to work with those, if of course, you've got other ideas or anything else comes up, then please, and do bring that. So, what do you think about an effective approach on this idea of integrating SSH into energy and that that would lead to evidence and the skills necessary to communicate that?

[pause]

Long pause.

[38:34] [inaudible].

You're all worn out. Well, okay, let me take a step back then. Do you think that integrating SSH into energy would inevitably lead to the better ability to develop evidence that has an impact in the way that we've been thinking about?

But can I ask, is there even at universities nowadays a field called energy where you can maybe use SSH?

Well, I'm writing that down because it's such a good question. Well, it is. Because effectively if you think about, what some of the things that we've been advocating in our action agenda here, and then, when we were writing this, I mean, I can remember some phone conversations, I think [removed for anonymity purposes] and various other people were involved in these Skype calls. And at the end, the point was made, that actually what we're talking about is the Americans have a new discipline called energy. I think the reason your question is so powerful is because, you then sort of interrogate and say, "Well, what is energy as a discipline? What are the hallmarks and characteristics?"

So it's about people that have some sort of technical expertise, that it might be in a particular energy technology, or it might be in a particular sort of integration of energy systems, but then it would also include an understanding of what the whole energy system is, and where technology interfaces with people, which is usually where the weakest link is, because scientists and engineers are very good at designing an ideal energy system. But then, of course, and I've had my colleague see it, the problem is not the system, the problem is the people. Well, that's an interesting observation, isn't it? Because you then, you challenge that and say, "Well, if you had designed a system that interfaced effectively with society, then it wouldn't be a problem." So, then what would your energy discipline look like? What would be its characteristics?

To me the next question, if I were a president of the university, then the first question I would ask myself is do I need an energy discipline, but do I need the curriculum that is called energy? Or wouldn't it suffice simply to say I have industries and other public offices out there who need trained people in certain areas? And I'm trying to provide that expertise through my existing curricular that are usually discipline based.

Yeah.

Yeah. I think that would be my...

But, I mean, the problem then happens, if you imagine something that is discipline based, I mean, as I said this morning, universities are very much physics chemistry... And we live in a world where its energy, environment, poverty, disease, transfers, whatever. And so, then you need to think about how you then translate from one environment to the other? Because there's no sort of natural pathways.

But is a change of the curriculum the answer to that? Or would it suffice to make changes within the curricula of the existing disciplinary, disciplines? Like you offer something in physics that gives them a better understanding, I mean I think [42:27] [inaudible] they have a lot of ideas about modules and about Japanese student generale as they call it in the German speaking world at least, I think it's a liberal art.

Liberal arts, yes, exactly Master of Sciences, liberal arts. Yeah, exactly. And we have those degrees. Wouldn't that do the job? I know you're working at the university that's why I'm asking.

Well, potentially. But another conversation we had with one or the other groups, was sort of about identity and belonging to an academic community. So, I could call myself [removed for anonymity purposes], we've all got lots of labels, and identities, and it's a bit like, the man of many masks. So, you put on a mask, depending on who's in front of you, but some people are very good at switching masks, very quickly. The other people only have a single mask they can wear, and then there is a real challenge for them to sort of navigate between one world and one world view, and a different world view.

So, I would argue, I agree that you can put extra things into the curriculum. But I would argue that there's real value in exposing students to an environment where their fundamental worldview is challenged, not taken away but challenged. A bit like, lots of things in social sciences are contested. In physics, if something is contested, there is a problem. It means there is an error in the experiment or the analysis, so there's some sort of physical reason why people disagree. But social sciences, it's perfectly acceptable, and if you've not come across that before, that's a real... Sorry, I'm a physicist. So forgive me if I'm misrepresenting. [laughter]

[44:21] [inaudible] but we're used to it.

People have to be exposed to that. Because you then think about in the context of this workshop about going into a policy environment. And we've made the points in the previous setting, what happens when you come along up against an ideological point of view that doesn't care about evidence, that's the biggest challenge of all.

If I may?

Yeah.

So, I'd like to add to what has been said now. I suggest [45:00] [inaudible] to this first question about what would be the effective approach, it is not something new. It's about what I called joints, joints is maybe not the right wording, research programmes, doctoral programmes, training programmes. By joints I meant interdisciplinary but also within the university interdepartmental or inter­faculty, so that you make it possible to really challenge and not just to have like one module, but you can or cannot choose to teach. Also, something that's may be interesting about [45:46] [inaudible] skills, and it's for every curriculum to every training in the qualitative and quantitative assessments and the relation.

Because in some disciplines, you are more trained to have with this, part of the research about quantitative measures. So objective, so called objective measures and they are [46:14] [inaudible] it's more of a qualitative, but both kinds of assessments are valuable, and they should not compete, they should add and complement each other. So, for that everyone should have the proper training in both kinds of evaluation methods so that they can use them adequately and so it could be proposition.

Well, I like that because in a sense, scientists are used to doing the qualitative metric numbers analysis [46:54] [inaudible]. But when it comes to something like energy, or indeed anything whether there was a big societal dimension, the richness of the narratives that come from quantitative methods is not captured by statistics. And often evidence that focuses on an individual can have far more impact than a report that's got thousands of individual inputs in the report. An individual life story can have much more impact as evidence, and I think the challenge then is how...

So, need to be to get this [47:31] [inaudible] skill to grasp at least both...

Yeah, I think what you are saying is you need to think about who your audience is, and what would engage your audience. And I would say generally, this is going to be a terrible generalization. Most policymakers don't like huge reports full of graphs and numbers, they just want a short... They want a story. They can then communicate as their own story as the lead on the policy and say, "Oh I met this lady on the street, my policy changed her life."

[48:07] [inaudible] because I would have been able to say exactly the contrary.

Really?

That they would [48:15] [inaudible] one or two big narratives that they can seminate instead of having a full-fledged narrative, that with all the [48:33] [inaudible]...

I think in my experience there is a wide spectrum because it depends very much on the body where these people serve and the position, they are in. Sometimes they prefer a story because they go around, because they are invited to... And then we have that kind of legislators or people really doing the hard stuff who really want lots of evidence because they want to be fair when they create the regulation or the laws.

So they're coming from a very wide spectrum, we were very disappointed when we went to the commission, with our full evidence, so 100 universities, see what they do, look at the programmes,

it's fantastic programmes. "No, no, we don't want that, we want the story." [49:19] [inaudible] story that we can promote story. [49:28] [inaudible] promoting story, I'm sorry.

This is politics.

[49:34] [inaudible].

That's what they said. And look at the nice evidence we have here, very rigorous finding [49:41] [inaudible].

That the report that you introduced because it's outdated or...

Yes, probably outdated, but it was completely up­to­date at the right time, and they look at this is what we're doing. How many students [49:53] [inaudible] rigorous, the input from company, [49:58] [inaudible]. You can go crazy honestly. I think [50:04] [inaudible] And this is what we [50:06] [inaudible] it is not all that different more locally. But then you have the hard worker guys, those who really need to find data [50:17] [inaudible], those are energy, they are not happy with story. Those drafting the energy [50:22] [inaudible] package. Then we really want facts. And so, I think there is a wide spectrum and I think that to turn that into kind of a positive term, I think precisely universities can offer that wide spectrum. And they can prepare people who are storytellers if they want to put it like that, also probably personal [50:46] [inaudible] because that is more you may inclined to be a rigorous person or a storyteller person. We have 20 million students, so there is place for virtually anybody.

So, I think that the important thing here is to note that variety of desired outcome that fit different purposes. And the universities should be attentive to that therefore provide the location for a wide variety profile.

Yes.

If you are saying connect something I mentioned in the other question about the factors to enable [51:28] [inaudible] technology and to ensure the policy engagement. I said, for me, I kinda take a leadership from, to decide and to go for it and also to lead the way and also role models of [51:51] [inaudible]. But maybe, if I may on that, I assume that internal structure and organisation should be an important factor. If we go to something that is in less siloes, you should have the structure, the internal structure of the university but you were talking about the university, right? That is connected to this, not so much [52:25] [inaudible], we can move from the other one, the biologists there and so on. We've... To pay attention to the internal structure of an organisation or of the institution should be an important factor to work on.

Yes. And in fact, some of those ideas are stretched out in here.

Yeah.

About internal structure. The notion of silos is very interesting. Because to go back to the very first question, we could create a silo called energy and then.

Yeah.

It's about, it's not... Breaking down the current silos, I think is a positive thing. Creating new silos is probably not what we want to be sort of advocating. It's about having, I guess an environment where there is a shared understanding of what the particular challenge is, be it energy or any other of the UN sustainable development goals. But energy in particular, needs people who have expertise in the physical sciences, it needs engineers, it needs the social scientists, it needs humanities to bring in as this calls the bigger questions. It's about, what sort of society do we want to be? Do we want to be an ethical society where energy is seen as something that's important, that all people should have access to? Not challenging the notion of markets, where some people are excluded because of markets. Should an engineer get involved in that debate when they're designing wind turbines? I would say they should at least be aware of it. And then there's broader sustainability issues. We had a session on energy ethics in my doctoral programme given by Simon Ablum and then we broke up into small groups to have a discussion.

And one of the engineers put up his hand and said, "I have nothing to contribute to this debate" and I thought, "Really?" I then said, "Well, before we have a discussion, can I ask you," Roger is the engineer, "You've decided to do your PhD in wind turbines. Does that mean you think wind turbine technology is the best technology? Do you think that it is appropriate to dig up 100,000 tons of rock from the earth to get half a ton of neodymium metal to put a permanent magnet at the top of your wind turbines? You use a non-renewable rare resource." It wasn't really to sort of try and make him feel uncomfortable, it was to realize that the right dimensions of what we do, that some people just don't engage what we think about, and I guess to me, a challenge is how you open those door. Some people may choose to engage, other people not but at least, you've offered them a choice. Yeah.

May I just try and answer or give an answer to your question as well?

Yeah, please. Yes, yes.

'Cause I'm a PhD student. And [55:20] [inaudible] here.

I'm captivated. Yeah. [chuckle]

I wanna take this opportunity to at least bring in the wish list and based on experience is that as a student, I made, were really great and in terms of asking how we could integrate SSH into energy related education. One of the best experience during my study times, I had was a self-organized student seminar at [removed for anonymity purposes] and it was called The Energy Seminar. I think it exists for more than a decade now and I'm a political science student. My approach and field was from political science into the policy field of energy. And what happened there is that you have the self-organized seminar going on every year, and it's supported by the university. There was a group of students coming together. But we sat there in the first session for one semester, "Okay, what are we gonna do?" With the process to decide what are we gonna do and what will happen and the answer we came up was a board game about the energy transition and there was engineers, there was people studying economy, political science, like me and so on. A lot of bunch of all different disciplines, that was very, very great experience.

I would love to see support and space that's created by universities for self-organized creativity by the students. And the second thing I think that could really help is to have something like policy or civil society fellowship. To... Even for early career research, to have some kind of funding to go into policy organisations, for example, go into civil society organisations and maybe experience they're bringing what they have. And the final point also answering to question two, would be that universities should remain a space where civil engagement overall is supported especially in times like these when we're seeing that climate action, there has to be pressure from the bottom up. So from the civil society and if universities managed to be open spaces supporting civil engagement, I think this is a very, very big contribution to... An overall understanding, which probably comes from the social part into policy making and politics in general.

Thank you. That's fantastic. Now, I would whole heartedly echo your comments about sort of student organisation of events. That's so powerful. I have some experience of doing that at my institution. In one year, I said to the students, "I want you to organise an outreach event. I'm not gonna tell you what it is." And they came back a few months later and they said, "We're going to do a film festival." I hired the cinema and they got about eight or ten student groups to make short three- or four-minute films about energy and the energy challenge, we had a photography competition, and we had an evening in the local cinema, it was hired and it was fantastic. I agree, there is so much creativity particularly in PhD students, but all students and sometimes the research process can just stifle that creativity. And what you're describing is a space where the only rule is there are no rules. And maybe it's not quite as [59:05] [inaudible] as that, but I think if you communicate to that student that any idea is welcomed, 'cause its sort of really empowering of students, isn't it? And it can make them feel that they're able to do something far beyond just their own individual research. And it sort of connects them to this dynamic community that's really powerful. I really like that and the fact that this has been going on for a decade, that says it all. If it wasn't working, it would have stopped after year one.

Yeah.

Not ten years later. That's fantastic. Yeah. You have no idea.

Yeah. You have regular support from faculty. Yeah. It's very important.

Yeah. Having a research or chair at the university said, "Okay. We're give you this... " The rule is [59:52] [inaudible].

Yeah, [59:53] [inaudible].

Yes. It is but you see, I would say the support can be as little as an active room with a title..

**Session 3**

Student energy seminar or whatever, and you put the students in and then you shut the door and then they create the activity because they feel empowered to do so.

Yeah.

The official support doesn't necessarily always have to be the academic telling the students what to do. Yeah, no, I agree with that.

If I may.

Yeah.

Because it came out from what we have been discussing. You were at the very start of the discussion you were asking about... What is it about energy. Is energy a field of research then we'd be discussing many other words and at some point, you mentioned sustainability and then would it be also... What is, in that sense is sustainability starting to become a silo or research discipline no not a discipline but an area and, in that case, would that be different from energy [01:00] [inaudible] ?

There are journals on sustainability, right?

Yeah.

There are journals on sustainability.

Yes. Well sustainability is what I would call a sort of a band wagon that's growing in momentum. And I'm not devaluing it. We've got the UN Sustainable Development Goals, we've got the journal of sustainable put in whatever field you want there's a Journal of Sustainable Chemistry, a journal of... And that's really important but I think sometimes we end up using these terms in a way that we make assumptions about what does sustainability mean. And I think there are various definitions of sustainability in terms of... Yeah.

Isn't there a master's programme in... Masters of sustainability that is truly interdisciplinary? Yes.

I think we need more.

Yeah. I think there is a growing awareness of the importance of some of these huge concepts and ideas such as sustainability, such as energy and there are lots of others and what they do is they really engage students in a way that other disciplines may not. I think when you're thinking about sort of structures at university, it's important to think about how you organise and how you communicate to students because then you will attract certain kinds of students that are interested in participating in the kind of programme that you offer and that's important as well.

The way I see it is because at the institution I am working at called [removed for anonymity purposes] and what happened to me is coming from an educational and political scientist in a policy field of energy and got exposed to broader perspectives on the field of energy so exactly what you are saying. And what... We are [number removed for anonymity purposes] researchers, around about, from engineers, chemists, to a lot of social scientists and it is a daily challenge and discussion, I think to find a common language.

Definitely.

'Cause every one of us carries an own understanding of what sustainability is. I would agree that it's a term that there's not one definition.

Yeah.

But I perceive that there's a lot going on [03:36] [inaudible]. That there is, I think, an emerging academic field called or labelling itself sustainability transition and they are looking at a lot of different things: Energy, food, mobility and so on.

Yeah. It's global energy.

Yeah. And then for me it was every time very, very insightful to then also compare it to your cases that already exist in approved textbook for example or doesn't exist. So, I guess that it makes sense to understand it and to relate to others.

But you said something really interesting about communication, because one of the challenges is that each discipline has its own sort of discourse. And if you want to be recognized as an expert in physics or chemistry or maths you talk the same way to everyone, else in physics. But when you then go out into your [removed for anonymity purposes] and you meet someone from a different discipline, you then have to learn how to communicate with them. So how do you that? What's your strategy? I'm curious.

How do you call it, muddling through.

[laughter]

No, trying to be... We had it just in our previous discussion, open and transparent of what your assumptions are.

Yeah.

And always trying to get my ontology and the [05:05] [inaudible] on the table.

Yeah.

What I understand, and what my definitions are, and this is what I try to be reflective, of. Then also try to understand that they might be other understandings which makes my life a lot more complicated, but I have, fortunately I have the time to... And that's also my purpose I think, in my position to think about these things.

Yeah.

This is how we do that, and then we have different formats how we engage in discussions with each other.

Yeah.

There is collaborations between projects and... Well, what helps is to actually work together with different people and perspectives.

Yeah.

This is so important.

Yeah. Absolutely. Yeah. Of course, it is.

This is such an important learning that every student should learn.

Yeah.

Because later on you...

This is experiential learning. It's really [06:03] [inaudible].

Yeah. Exactly.

And my experience with having PhD students in a similar situation, where you put them together and they have to learn. And the really interesting thing is that that mode of communication, it's not made explicit. People do not tell you how to do it. You start, and as I say, you muddle along. Okay, so that's sort of implicit and you have to work it out for yourself.

Yeah.

But I would say the real value of doing that is that it reveals complexities in the energy system that was previously hidden to you because you hadn't thought about it. And the geographer says, "Oh, this." And you think, "Really." And then you go away, and you think, "Well, actually" you then have a different sort of perspective. And then you can put on a different mask that I was talking about before, so you can then eventually adopt the position of other people that gives you more confidence, and I think that's how people build up their ability to communicate more widely.

Having this space, I mean [06:57] [inaudible] a certain curiosity...

Yeah.

Not to, this is [07:07] [inaudible] negative or critical [07:07] [inaudible]. How does this fit with the fact that universities as organisations for the last 20, 30, 40 years becoming more and more managerial, having tighter and tighter budgets, having more and more indicators to the driving of internal managerial decisions? How does how does the [removed for anonymity purposes] fit those two things together? I mean, because...

[laughter]

I mean, not to be [07:37] [inaudible].

[laughter]

[07:41] [inaudible] managerial question, I mean.

Of course, it is. [07:42] [inaudible].

I know.

I just want to ground this a little bit in the reality again.

Well, I mean...

The creativity spaces in this time, which is a [07:56] [inaudible] of course, but from everything that you've gathered, it seems rather that they are more of a restricted and not empowered from what I...

The reality is they're unique...

Okay.

Across Europe.

Okay.

And it depends very much on the capacity of each system to re­invent itself... Yeah.

So, at the risk of being unfair to a proper selection of universities, it is not uncommon that universities try to adapt as much as possible despite of the restrictions, in terms of... Not only in terms of budget, also in terms of autonomy.

Yeah.

Or in terms of, yeah, the legislation that they are subject to in their framework, normally nationals. But I think that the beauty, if I can say, of universities is that professor’s contrary to what is thought, they are very mindful of the changes in society.

Yeah.

And they really try hard, I'm speaking, of course, general and probably not every professor does that but at least, those who come forward to work with the [removed for anonymity purposes]. These are... It's a population of professors who are really mindful of societal issues, not really looking only at their own discipline but trying to put things into context. So maybe my vision is biased because I am more in contact with that kind of people.

Yeah, okay.

That is, those that come naturally to [removed for anonymity purposes] environment.

Mm­hmm.

Okay.

Yes.

Those who are kind of looking for their own bubble, precisely because of that they don't move from the bubble.

Yeah.

So, my vision is bias in a sense that I'm more in contact with people like [09:45] [inaudible]. You, see? Yeah.

Many people like him. So, this is more trying to find the solution. Even people in countries with tremendous difficulties like in Romania or Slovenia or [10:03] [inaudible]...

Mm, yes.

Romania, they have a tremendous difficult situation at university. Yes, you have this person who is willing to get herself into international conferences and linking with people like us, she's a [removed for anonymity purposes]. So, as I said, I am in contact with this guy. She's trying to bring modernism into a very old-fashioned system that's only been within these four walls, of course. You see, there are many ways of coping with the challenges and unfortunately many times it's up the individual.

Yeah.

Mm­hmm.

And how entrepreneurial they are in their own positions as...

Yeah.

Professors to get out of the limitations of the system. It comes down to very... At the end, very personal engagement. But it is true that at the systemic level universities are under a lot of pressure because budget strength or maintain but definitely very few systems increase budget. Honourable exception is Germany, but the other systems are not like that, they are not guaranteed a yearly increase and some of them don't have an opportunity to look for sources beyond what they receive from the government. Yet, the pressures of universities are increasing constantly because they are required to connect [11:37] [inaudible] industry to [11:38] [inaudible] society. So, I mean it is a lot of pressure today on universities so it's much more than 10 years ago, especially in this societal dimension in our group, so it is interesting to figure out.

Okay.

That's why I think that at least that's our experience, when we can put together people in this type of network, that's very good for them...

Yeah, sure.

Because they make them, I put in contact with other people like him or like them, who are able, or women who go beyond that and the power of networks, I think, we underestimate it. How this network like this can help further the universities.

Yeah, exactly, but otherwise it's lonely being pioneer.

Yes.

It takes other people to pioneer with you. So that's the answer to your question, go and find a friend to help you.

[laughter]

Thank you. Yeah, this is still, do I turn this off now?

How do we turn this off? I think...

[background conversation]