Metabolic Impact Assessment and its Relationship with SEA

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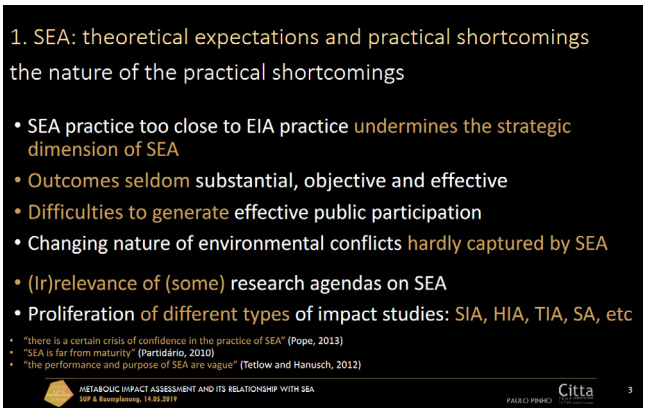
I am very pleased and honoured to be here today and have to start by thanking for this invitation to this special building, facing this special audience. I am going to have only 15 minutes, which, especially for an academic, is a challenge - as you all may know. I will try to do my best and, unfortunately, will have to skip the most complicated slides. We are developing a new concept of metabolic assessments and I am going to look at the relationship between metabolic impact assessments (MIAs) and strategic environmental assessments (SEAs). I added a subtitle (editorial note: "Disentangling SEA from the sustainability trap"), which may sound strange to some of you but expresses my main message: we need to disentangle SEA from the sustainability concept. I think that, somehow, SEAs are trapped in that concept, and perhaps with approaches like urban metabolism we can help this disentangling process. I will start with a critical look on SEAs, then move on to introducing the concept of metabolic assessment and to conclude, I will try to bring those two together.

The rationale of SEAs is simple and straightforward: the idea is that looking at the environmental impact at project level is simply not enough, because major decisions are made at higher levels and specified in higher order plans, programs and policies. Several books of the early eighties, for example by Tim O´Riordan or by Chris Wood and Norman Lee, described this aspect quite clearly. At that time there was a debate about whether to conduct an environmental assessment of strategic documents or a strategic environmental assessment of documents - strategic or not. Our directive followed the second approach, with quite an ambition to include sustainability and the strategic dimension. Well, when we get into practice- and I have to say this: what I say here has nothing to do with the Austrian context, that unfortunately I don't know, so this will be a general pan-European perspective - the general conclusion is that SEA in practice is not as relevant as it should be in most cases. For a number of reasons, which are listed in this slide (Illustration 1).

Illustration 1: Practical Shortcomings of SEA



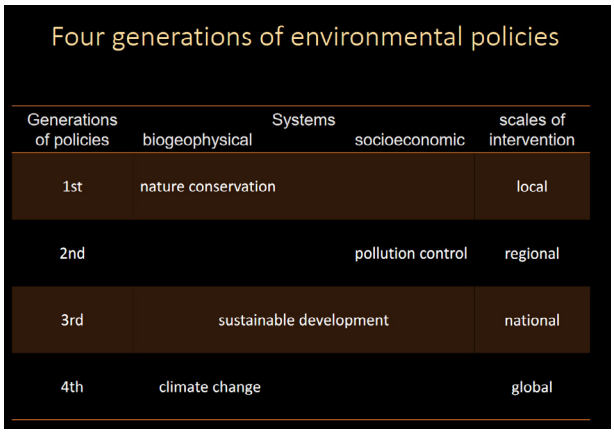
Source: P. Pinho, 2019, p.3.

Recently, a number of other impact assessment concepts emerged. Concepts like

- social impact assessments,
- health impact assessments,
- territorial impact assessments,
- sustainability assessments,
- and metabolic impact assessments.

I think of this as a natural move, as my perspective is that all these things have to come together. One of the key points for my argument lies in this very simple table, which shows the sequence of environmental policy generations over the last sixty to eighty years

Illustration 2: Four generations of environmental policies



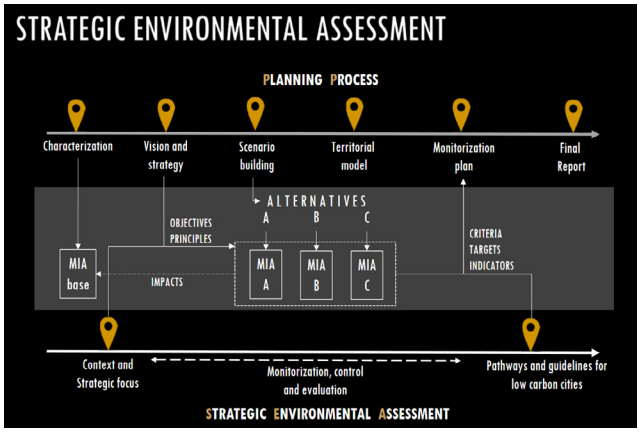
Source: P. Pinho, 2019, p.4.

(Illustration 2). Everything started with nature conservation and a local perspective on how the environmental system works, then shifted to pollution control emphasizing the externalities of the socio-economic system and the regional dimension of intervention, then we had this all-embracing concept of sustainable development, trying to bring together the biophysical and socioeconomic system and with it we gained the national dimension as the most adequate to intervine. At the moment, we are in the fourth generation of environmental policies centred around the climate change challenge. Our perspective is now global and the emphasis is moving again back from the socio-economic system to the environmental system. In my view, SEA is typically a policy tool from the third generation of environmental policies. But it has somehow been blocked by the ambiguities and the contradictions of the sustainability concept, which tries to tackle everything, bringing environment, social, economic, cultural and governance aspects together. To me, all that is not really possible and compatible. We have to make choices. One example is the amount of research that has been carried out on the subject of sustainability indicators so far: it is endless. I am still waiting to see the definitive set of indicators that really encompasses in a coherent and effective way the whole sustainability concept.

Now, moving on to the new concept of MIA. First, let us see what the main features of this fourth generation of environmental policies are: everything focuses around the climate change concept, and now with a sense of urgency. We have to reduce our emissions and do so rapidly. In terms of indicators everything seems to be a bit clearer now. We recognise that carbon is a very good indicator able to encapsulate the nature of most environmental conflicts in our societies at present. There is no time for compromises, there is no planet B as many people say. So these are some of the features of the present generation of environmental policies. I will try to place MIA within this fourth generation. Based on the urban metabolism concept we are concentrating all our research and all our efforts into the urban realities, how cities work, what are the relations within cities. This way, we can actually bring together protection and consumption processes. We all know that in some parts of the world, especially where we are, the biggest problem is not the production, it is essentially our consumption patterns. Other things also important are mobility and accessibility, two different concepts that can be analysed together under the framework of urban metabolism. We can understand the relationships between land use, urban form and energy performance better and this is essential to understand how our cities really work.

The MIA concept actually evolved from a European project called "Sustainable Urban Metabolism for Europe", coordinated by ÖIR and led by Christoph Schremmer, some years ago. Within this project, that I have very good memories of, we developed a concept of MIA in our work package. The idea was to develop a methodology specially tailored to look at the impacts of urban plans and projects in the overall metabolism of cities and metropolis. This way we can unravel the drivers of city energy performance and understand better how our cities work. From a conceptual point of view, MIA is based on a large number of theories and methods. This slide (Illustration 3) tries to place the MIA concept in the planning process and the SEA.

Illustration 3: SEA planning process



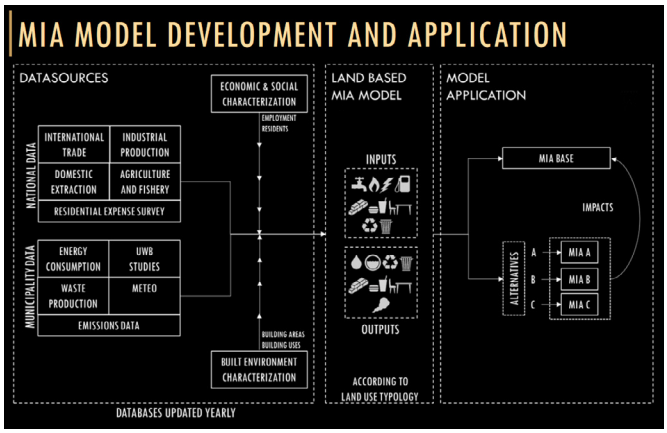
Source: P. Pinho, 2019, p.10.

My argument is that, from a procedural point of view, it is not difficult to include MIA into SEA. The problem is not so much at the procedural dimension, but in the methodological dimension. Here we are facing a big challenge: it is not easy to apply the method if you don't have a detailed and comprehensive urban metabolism model of a city.

Urban metabolism models have to have an explicit spatial dimension, preferably running on a GIS platform. This is very difficult to find in literature, as most of the existing urban metabolism models are 'black box'-models: there are inputs and outputs but nobody knows too well what happens inside the box. So we have to open the box and look at the role of space in transforming the input into the output. This is what our work at the CITTA research centre

of the Faculty of Engineering of the University of Porto is focussing on. We are trying to make this simpler, easier and more friendly to apply – which is a challenge. This diagram (Illustration 4) gives you an idea about how we can put together the different components to build an urban metabolism model, that is suitable to apply MIA with.

Illustration 4: MIA model development and application



Source: P. Pinho, 2019, p.13.

When we started developing the MIA concept, we first tried to apply it in the city where I came from, Porto. We developed a quite complex urban metabolism model, very difficult to sell to anyone, in particular to our local planning department. But at least we managed to develop and apply it. We launched an urban pilot project for the integration of a new mixed-use typology project with a sports centre, a new shopping centre, new green spaces, housing, offices and public services. We tried to see what the impact of the project would be on the urban metabolism of Porto. We reached the conclusion that if the project was to be implemented – which is the reality now - it would increase the overall energy consumption of the city by around 1%. That did not sound much, but we had no comparative references. We couldn´t check whether that number was low or high. Well, we thought: "Let´s see if there are other sites in the city that could house an urban project like this", and we managed to find two other locations. In our lab, we decided to hypothesize the possibility of using the same urban development program for that particular project on those two different alternative sites.

The conclusions were actually far more interesting than the first result. We came to the conclusion, that in both other sites the overall impact would have been reduced, with energy consumption increases of just 0.5% in one case and 0.7% in the other. The advantage of our methodology was that we really understood the nature of the flows in cities, and the importance of the relative distances in between residence and job locations. Centrality was the key factor to explain the different energy performances of these alternative sites. Whenever you try to bring things close together, you reduce the flows, increase the energy efficiency - everyone knows that. But when you actually have the figures in front of you, the evidence becomes stronger and you can really influence decision making with examples like this. At the moment we are exploring this methodology in the city of Lisbon in collaboration with the local city planning department, but we are still at an early stage.

I will therefore move to the conclusions now: the difficult aspects of MIA proposals are related to the fact that MIA is unable to deal with environmental issues, which are not spatially driven and lay beyond urban and metropolitan boundaries. Therefore, we are just looking at typical urban projects. MIA also requires a lot of data and sophisticated technical resources that are not available to the generality of local authorities. So, if we want to sell this idea, we have to make it simpler - that is our main challenge now. The methods also need to be simplified and made less expensive, otherwise there is no way that we can sell this product. But I think there are some positive aspects: First of all it can encapsulate the real challenges of this time, in particular the articulation between production and consumption processes. It is geared towards urban and metropolitan areas where most of the challenges of climate change are located. It can help measure and quantify progress towards decarbonisation goals and targets and it is able to identify the drivers, the cause and effect mechanisms of energy efficiency in cities. We have not yet had time to test it in practice but I think at least in theory it would enlighten public participation processes. Finally, and that is perhaps the main conclusion, it can disentangle SEA from what I called the 'sustainability trap'. The sustainability concept promised to account for everything when we know that only a few things can be realised in practice. And climate change requires more pragmatic approaches such as MIA. Thank you very much.

Dieser Text wurde von Lena Rücker transkribiert.

Sources

Pinho, Paulo (2019): Metabolic Impact Assessment and its Relationship with SEA- Disentangling SEA from the Sustainability Trap. Presentation SUP & Raumplanung 2019.