ion is taking decisive steps towards harmonization and the setting of common targets)

- Challenges in supply chain management and the build-up of efficient supply chains is still in "its infancy" in most countries
- Market pull as the success of recycled textile fibres depends ultimately on end users and their consumption habits

We also discussed timelines with Afry. They mirrored our observations which are that this is a lengthy, protracted process while all the time the financial clock is ticking.

They told us: "Scaling up a chemical process is often considered a long journey as it requires a lot of research, process development, and optimizations. Additionally, the availability of fundings, resources, and the existence of policies and regulations play significant roles in the scale-up timeline.

"Following the journey of the current technological developments in this field, shows that it takes several years for a technology to reach a pilot or demo scale production which is still far from the actual commercial (mass production) scale.

"However, since competition is high between these new technologies they [are all trying] to accelerate their development and reach the market in the shortest possible time."

This is a notable point. Early adaptor advantages could be significant in this market and play a major role in how the market evolves. Paradoxically, there were – at the time of writing – rumours within the industry that a couple of major, well backed players are looking to enter this market.

On cost, Afry was able to provide some ballpark figures and these echoed our own findings gathered via off-the-record briefings with a couple of companies involved in this segment.

Afry told us: "As each technology for textile-to-textile recycling (chemical recycling mainly) is a unique process it is not possible at the current stage to provide a figure, as there are many parameters that can affect costs. For example, the amount and type of chemicals used and how closed is the process, the size of the plant (as this can vary to some extent, there is not a standard for this), the level of automation and the location of the plants.

"Generally, typical Capex level for pilot plants varies from €5-10m, while demonstration plants have been built for €30-50m. Commercial scale operations, for existing and proven technologies (e.g. viscose or lyocell), would require specific investments to the level of 3000-5000 €/t. Therefore novel products are likely to cost more than this as their commercial scale would likely be smaller than the largest of the existing textile fibre mills."

Clearly the costs of production will vary around the world. Afry acknowledges, for example, that costs should be lower when a plant is built in Asia compared to Europe.

On that front, they added: "However, one of the new trends for making the textile industry more sustainable is to bring back this business for example to Europe and create some sort of deglobalization in

FROM IDEA TO COMMERCIAL PRODUCTION IS A LONG AND TIME CONSUMING PATH

Typical lifecycle of new innovations to markets