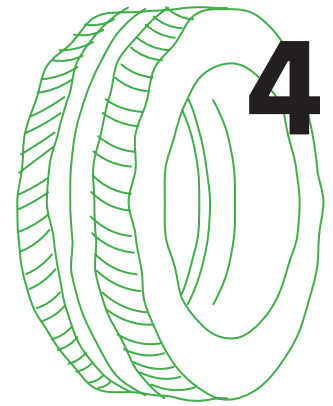


# Retreading tyres



## Description of the business

### Context

Rubber is one of the 10 resources that contribute most to imported deforestation, and is massively used to manufacture car tyres. Tyre use is in no way shrinking, and the various Belgian legislators (Brussels, Walloon, Flemish) have taken care to regulate management of used tyres, in an effort to maximise their circular use.

Among the various solutions, retreading tyres is a direct recycling technique whereby a worn tyre becomes... a tyre ready for use. Retreading involves replacing the tread of a worn tyre with a new tread, while retaining the original body or "carcass". Apart from cost benefits for the customer, the advantages are mainly environmental: 70% less oil than a new tyre, lower CO<sub>2</sub> emissions and up to 14 kg less steel (in the carcass).

So, alongside a collection obligation, the Brussels-Capital Region has ordered a retreading rate of at least 10%. Non-profit Recytyre was founded in 1998 and is tasked with this operation on behalf of all stakeholders in the tyre sector. While the organisation recorded retreading levels above 10% up to 2013, the current rate is 5%. Only a small fraction of the recovered material is used in energy generation (less than 5%), while the main proportion is re-used in various ways in granule form (see sheet 5 on circular soles). To support innovation and find better outlets for these materials, Recytyre created the dedicated GREEN.er fund with the King Baudouin Foundation.

### Industrial activity

The technique is fully established, and the existing offer, in particular from major players like Michelin Remix and Laurent@Retread or Bandag (BridgeStone group), focuses on truck tyres. The other retread brands, from GoodYear to the Italian Marangoni and French Blackstar also all seem to be focused on truck tyres.

So while 25 to 30% of truck tyres undergo retreading, there are almost no statistics on car tyres, which nevertheless are a major part of the source pool. Recytyre's 2019 annual report notes that 31.2% of tyres collected came from HGVs, whereas 58.3% came from so-called "Touring" cars (with the rest from agricultural and industrial vehicles).

The idea is therefore to establish a local retread facility in the Brussels-Capital Region, to handle not only truck tyres (which certainly seem profitable) but car tyres too, and why not even cycle tyres.

The associated business would therefore address the following key steps:

- Managing procurement in partnership with Recytyre
- Retreading tyres
- Packaging for distribution
- Distribution to tyre-fitters in the region (and surroundings)

## Technical feasibility

Technical feasibility is proven, with long-term operators in the sector active for over 60 years. But there are two conditions for retreading:

1. The tyre needs to have been designed from the start for optimal retreading. Only tyres with carcasses that are sufficiently robust for several iterations are taken by retreaders. These are known as multi-life tyres, in contrast to single-life tyres (low cost tyres that cannot be retreaded).
2. Furthermore, a tyre can only be retreaded if it has been properly and professionally maintained.

These feasibility criteria, while apparently well understood for the HGV sub-sector, need investigation for cars, where a preliminary study will need to determine which tyres and brands offer the necessary quality.

It should be noted, however, that retreading tyres for light vehicles has been practised for decades, in India for example, demonstrating the technical feasibility, whatever the tyre.

## First Elements to be analysed by the project team

- Investigate and understand why all the current actors focus on truck tyres, and the reasons they are not interested in car tyres (probably for financial reasons and labour cost/tyre cost ratios).
- It seems highly likely that there is complexity here, because of differences in size/type, or very narrow channels because of the criteria noted above, with an associated price impact. But completely circular design should be able to reduce or at least explain this price and make it “acceptable”.
- Test the “solidity” of light-vehicle tyres collected by Recytyre
- Validate the availability of sufficient quantities with Recytyre.
- Then validate the business model.

## Sources of inspiration

- GoodYear video on retreading truck tyres: <https://www.youtube.com/watch?v=-31ulxdK0I0>
- ContiTrade (Continental) retreading video: <https://www.youtube.com/watch?v=Bo2jMtGOArc>
- Brussels ruling on used tyres: [https://www.etaamb.be/fr/ordonnance\\_n2019012987.html](https://www.etaamb.be/fr/ordonnance_n2019012987.html)
- Recytyre: <http://www.recytyre.be/fr>
- GREEN.er: <https://www.greener.fund/>
- Bandag: <https://www.bandag.eu/fr/>
- Laurent@Retread: <https://www.laurentretread.com/>
- Michelin: <https://pro.michelin.fr/pneumatiques/offre-rechapage>

# Business potential

## Market

There are numerous operators, but they are strongly focused on truck tyres. Retreading for HGV tyres is labour-intensive, and it is estimated that in Europe it provides 32,000 direct and indirect jobs. In France, 4,100 jobs are involved. European operations are mainly focused in France, Germany, the United Kingdom, Italy and Spain.

In financial terms, an article from French weekly Le Point on 2 June 2020 gives some clear information about French company Black-Star: “the company employs 36 people, has an annual capacity of 310,000 reconditioned tyres and achieves turnover of around €4 million”. With laws promoting the circular economy, Michelin asserts in the same article that it wants to re-enter the sector for touring car tyres, which they left behind as a company several years ago.

The financial equation is well established for truck tyres, with all actors promising their customers a more than substantial advantage when opting for multi-life tyres, and some, like Michelin, going as far as choosing to sell performance by the kilometre (functional economy).

The same remains to be proven for the “touring” tyre. Given the service and labour intensive aspect, and while the materials being handled are relatively heavy, this would be a business well-suited to a local setting.

As regards volumes, Belgium is one of the most dense road transport hubs in Europe (both for light and HG vehicles), particularly because of the presence of two of Europe’s busiest international ports (Antwerp and Rotterdam). Belgian vehicle registrations in 2019 numbered 5.89 million cars, 741,000 vans, 151,000 trucks and tractor-trailers, 16,000 buses and coaches, 195,000 agricultural tractors and 499,000 motorbikes. So more than 7.5 million vehicles. A survey by Belgian consumer organisation Test Achats in 2015 showed that the average life of a light vehicle tyre is 41,500 km, with renewal every 3 years (14,700 km per year on average).

The number of light vehicle tyres sold annually in the country is therefore around €7.8 million.

The average price of a touring tyre is €75 inc. VAT, not including fitting, and €90 inc. VAT for a winter tyre.

The Test Achats survey also shows the percentage of retread tyres (2% of the market for summer tyres, 7% for winter). So around 351,000 retread tyres are sold in Belgium, for turnover of €21M (at €60 per tyre).

Apply that to Brussels and its 490,000 cars, and you have over 653,000 tyres sold in a year, of which 29,000 recycled, for turnover of €1.7M.

Note that SPF mobilité’s study “kilometres driven by Belgian vehicles ” provides all the necessary figures, region by region, including for trucks, buses and motorbikes.

## Competition

Although the existing offer focuses mostly on trucks and other industrial vehicles, it can only be expected that the various actors will expand their offers if the sector for retreading tyres for light vehicles develops. At present, however, none of these actors is present in Belgium, so there is an opportunity to be grasped.

There is no real first-mover advantage and the competitors can quickly decide to extend their existing ranges if they choose. Everything will depend on the cost structure and margins generated.

## Circular nature of the business

- By extending life and minimising use of non-renewable resources, retreading is a typically circular activity.
- With high levels of labour, the business would anchor know-how in the Brussels-Capital Region in a way that is supportive professional training and the return to employment, while increasing the region’s overall resilience.

## Key figures

### Assumptions

If the business uses a distribution network of tyre fitters, and these receive a 25% margin on the final product (to be confirmed), with the average price of a retread tyre at €60 including VAT, we can make the following assumptions:

- Final sale price: €60 including VAT, €49.6 excluding VAT
- Distributor margin: €10 excluding VAT
- Factory output price: €39.68 excluding VAT
- Cost of recycled raw material (Recytyre): €50/t
- Weight of a tyre: 7 kg (5 kg of rubber and 2 kg of steel). Tyre rubber is made up of natural rubber, carbon black and many other products (see Michelin - All about tyres)
- Recytyre raw materials per tyre =  $50/1000 \times 7 = €0.35$
- Cost of rubber: €1.3/kg
- Quantity of rubber per tyre: 3.5 kg
- Raw materials costs: €10
- This leaves €29.68 to cover operational costs and margin

Assuming retreading of 50,000 tyres a year (7.6% of tyres sold in the Brussels-Capital Region alone), we have:

- Turnover: €1984k
- Raw materials: €500k
- Team: 40%: €593k
- Opex: 30%: €445k
- Investments (credit repayments): 10%: €150k
- Margin of 20%: €296k

The credit repayments allow investment of around €1200k to €1400k which should be enough to cover purchasing the necessary machinery and equipment.

### *Job creation potential*

The team could comprise around 2 to 3 FTE in management at €80k per annum and 9 to 11 FTE workers at €40k per annum. This does not include any employment subsidies or support.

Equipment must be chosen so that each FTE can produce 5,000 tyres per year, so  $5,000/220 = 23$  tyres per day per person, or 3 tyres an hour, which seems reasonable, given that vulcanisation time for a tyre (the longest part of the process) is 15 minutes.

At 4 tyres an hour per worker, the potential increases to 62,500 tyres and turnover of €2475k, with a margin of €750,000.

We therefore believe that the financial potential of creating a business in the Brussels area is validated, if our assumptions are confirmed.

### *Recycling potential in tonnes*

Retreading 50,000 tyres means using 100 to 150,000 old tyres, given that it takes 2 to 3 old tyres to produce a retread (using material from old tyres to manufacture the retread), so 700 to 1000 tonnes of rubber recycled annually. A retreaded tyre saves 18 l of oil compared to what is used in manufacturing new<sup>1</sup>, a saving of 900,000 l of oil annually, enough to heat 300 homes!

## Made in Brussels

### **Local procurement**

It will be fundamental to work with Recytyre for baseline procurement. Once the business is up and running, direct collection of multi-life tyres can be established. It will also be important to be able to recover multi-life tyres that have already been retreaded by the company, so as to ensure their life is extended, even if it means changing to a different vehicle (through Recytyre or directly).

### **Local partners**

#### *Partners*

To guarantee quality, and therefore the process, it may be a good idea to work with a technical partner.

<sup>1</sup> <http://www.linternaute.com/actualite/savoir/07/petrole-yaourt/4.shtml>

## Suppliers

- See above for the tyres
- There will also need to be suppliers for other components in retreading: rubber materials, glues, etc.. There can be no guarantee that these will be local however, because they will need to be the leaders in the field. The technical characteristics of the rubber to vulcanise the tyres must be studied with the actors already in place, with a view to assessing whether there are exploitable resources (other than low quality tyres that cannot be retreaded but from which good quality raw materials can be recovered).
- Procure equipment from actors in the sector

## Distributors

- It will be necessary to integrate with the existing tyre distribution network, which is already well established.
- Or consider organising a direct sales channel, to protect margins (but volumes are liable to be too low)

## Subcontractors

In principle none for the activity itself, but competent service providers will certainly be needed to maintain the various machines.

## Competitors

See above.

## Location

The exact processing line needs to be analysed, with the various machines required. Given the need to store tyres pre-processing, and after retreading before they are dispatched into the distribution network, there will quickly be a need for 2,000 m<sup>2</sup>, with additional external storage areas.

# Key factors for success

## Operational and commercial barriers

The price aspect, linked to feasibility across a wider market than just truck tyres, is undoubtedly the critical element to validate, with operational and commercial factors closely tied in.

In the light of certain operators' long experience in retreads for trucks, collaborating with a technical partner - as suggested above - seems like the best way to quickly overcome various technical obstacles.

## Intellectual property

In principle, if there are patents in place, they will be on the equipment to be used or materials such as glues. This should not therefore be an obstacle to the process or business.

## Legislative obstacles

None; quite the opposite, with legislation shifting in favour of the circular economy, with specific rulings in the tyre sector. Since 2006, it has been illegal in Europe to dispose of used tyres in landfill (hence the creation of Recytyre).

## Other risks

There will need to be a full assessment of procurement capacity through Recytyre, including "quality" with respect to the technical criteria needed for touring tyres.

## Project team skills

Given the technical nature of retreading, the presence of a technician comfortable with this sort of process seems essential. If this person does not have direct experience in the tyre sector, a technical partner will be required to provide the expertise.

This being a sector with some relatively big players and very well established networks (particularly distribution), a commercial team member who is used to dealing and negotiating in this sort of context also seems necessary. Otherwise, the team needs the “classic” entrepreneurial skills, with someone in charge of management and finance, and an operations member to orchestrate the stock/retread/production processes.

The rest of the team will be made up of workers tasked with retreading and dispatching the tyres.

## What the RBC (Brussels-Capital Region) can do make it a success

- Promote retread tyres in public procurement, as is already the case in France, not only for trucks, but other vehicles too, so as to create a stimulus to ensure sufficient business to launch the project:
  - Prepare a standard public tender for the acquisition of retread tyres for light vehicles (and other vehicles)
  - This means 50 tenders a year for 40 vehicles each, so 2000 vehicles and 8000 tyres, generating guaranteed turnover of €480,000, which would be enough to establish the basis of the business

## References and links

Public procurement	<a href="https://environnement.brussels/sites/default/files/user_files/pneus_rechapes.pdf">https://environnement.brussels/sites/default/files/user_files/pneus_rechapes.pdf</a>
Bandag	<a href="https://www.bandag.eu/fr/">https://www.bandag.eu/fr/</a>
GREEN.er	<a href="https://www.greener.fund/">https://www.greener.fund/</a>
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Rubber waste potential in France	340,000 tonnes a year! & reference to the European directive: <a href="https://abgi-france.com/communication/comment-revaloriser-nos-dechets-en-caoutchoucs/">https://abgi-france.com/communication/comment-revaloriser-nos-dechets-en-caoutchoucs/</a> and <a href="http://www.cd2e.com/node/229">http://www.cd2e.com/node/229</a>
Review of processes for using waste rubber	Record and Bio-IS 2012 study <a href="https://record-net.org/storage/etudes/10-0911-1A/rapport/Rapport_record10-0911_1A.pdf">https://record-net.org/storage/etudes/10-0911-1A/rapport/Rapport_record10-0911_1A.pdf</a>
All about tyres - Michelin	<a href="https://www.moto-ecole-liberte.be/IMG/pdf/tout_sur_le_pneu_-_michelin.pdf">https://www.moto-ecole-liberte.be/IMG/pdf/tout_sur_le_pneu_-_michelin.pdf</a>