

Front and back cover:
Photo by Ke Yang and his drone
Designed by Amaya Hernandez

Table of Contents

00	Prelude	6
01	Reclamation of Steel Buildings in London's Olympic Park	10
02	A Lone Reseller	28
03	A Shifting Culture	40
04	Reclaimed Brick Industry	54
05	Deserted Highways	70
06	Salvaging Stones	86
07	Roman Patrimonio	100
08	Material Hinterlands	114
09	No Room for Reuse	130
10	Material Flows in Sweden	146
11	Social Value in Reuse	156
12	Life and Rules in an Informal Reclaimed Material Market	174
13	Relevance of Reuse on an Island	184
14	Acknowledgements & References	200



Diploma 18

Architectural Association
2020/21

Igor Gola
Frida Østby Hansen
Amaya Hernandez
Jianghai Hu
Sorana Mazilu
Iris Meng
Alex Mitea
Shubaib Mohamed
Ele Mun
Alice Nobel
Nikitas Papadopoulos
Jihane-may Slaoui
Phillip Tsang

Tutors:

Aude-Line Duliere
James Westcott
with Rotor:
Tristan Boniver
Arne Vande Capelle

Book Editors

Ele Mun & Amaya Hernandez

References

Frida Hansen

Despite our best efforts to properly credit and source the images and data in this book, we are still human.

Please alert the editors as to any missing or incorrect information.

opalisglobal2020@gmail.com

Contemporary and historic practices of material reuse offer a lens through which to reveal our monetary, imaginative, contractual, cultural, visceral and intimate relationships to the building stock. A souk in Casablanca, a concrete waste management plant in Hong Kong, a state-of-the-art yard owned by government in Malmö, or informal housing in an abandoned building in Rome – reuse takes many forms across the globe.

Through conversation with the protagonists of some of these sites, a comparative framework of specificities and common characteristics begins to emerge in this book, helping us identify the forces that facilitate or hinder the flow of material. It becomes clear that some nations that invest in future promises can lack implementation 'in the field', whereas other contexts without such a formal framework have already developed a booming informal reuse economy.

The exchanges in this book broaden the horizon of Diploma 18, Rotor, and the Architectural Association itself beyond established fields and beyond Europe.

Dip18 joyfully engage with topics including inventory, machinery, logistics and labour markets while grounding our projects in impactful and realistic outcomes, liaising with professionals and strengthening relationships with allies.

These efforts aim to expand both the definition of design and material culture and the role of the architect, and also to reconsider how best to represent them within the AA and to communicate them to decision-makers in the professional field.

Aude-Line Duliere and James Westcott
for Diploma 18, Architectural Association
London, 2021

Prelude

By this time last year, the last cohort of Diploma 18 must have been on right around three (or was it four?) road trips down to Dorset. With each back-and-forth was a better understanding of the site (Hooke Park, the AA's woodland campus) as well as the landscape in between. It's now the Spring of 2021, Amaya and I are tucked relatively cosy in what is the third (or was it the fourth?) iteration of the desk's arrangement in the living room – each arrangement presenting us with the view of a whole new wall.

This is not to say that we've only been staring at walls the whole time – throughout the year, each tutorial slot is separated not only by a 5-minute tea/toilet break, but by vast distances. Each slot becomes an on-screen glimpse into worlds of reuse far afield, the fact that members of Diploma 18 are scattered throughout four continents is seen as an asset.

Reuse is happening everywhere – while there are the obvious parallels to be drawn (demolition, salvage, reuse), each instance encountered by students of Diploma 18 reveal already-existing practices and ambitions specific to its immediate and wider context. These 'tangents', in turn, weave into a single, albeit multi-faceted narrative about our relationship with the material world. Compiled in this book are glimpses into these worlds within the world.

Each chapter is seen as a pretext for proposals to come and Diploma 18's focus on material flows are simply means to an end. We continue to refine what this end (or rather, something closer to it) might look like, and the immersion into these worlds will only deepen.

Until we meet again,
Ele Mun and Amaya Hernandez
for Diploma 18

UNITED KINGDOM

01

Igor Gola speaks with David Rose from Portal Power regarding the difficulty of reusing steel in the UK.

BRAZIL

03

Amaya Hernandez interviews Luciano Saraceni, an architect based in Florianópolis, Brazil and contrasts his opinions about the city's reuse market with a more hopeful conversation with the architects Arquivo.

UNITED KINGDOM

05

Sorana Mazilu speaks with Gerry Heward, a professional freight handler, about the possible re-integration of London's waterways into the construction industry.

ITALY

07

Alex Mitea finds himself speaking with a member of a community that has been squatting in a former soap factory in Rome.

NORWAY

02

Frida Østby Hansen meets with Martin Eid in Recirqel's warehouse to discuss the Norwegian reuse market.

CHINA

04

Jianghai Hu finds Huang Tian and Li Li Jiang playing cards in their reclamation yard in Chengdu.

CHINA

06

Iris Meng goes on a road trip to Jinan, where dozens of villages are being demolished, and chances upon Zhong Wei, who was hauling a stone slab onto his truck by hand.

08

Shubaib Mohamed interviews Mandeep Bhandari, a key player in Dubai's steel construction industry, about the potential in the sector for material reuse.

UNITED ARAB EMIRATES

10

Alice Nobel speaks with Johann Andersson, project manager for an online reuse platform commissioned by the Swedish environmental institute, about the region's reuse market.

SWEDEN

12

Jihane-may Slaoui meets with Yassine, owner of arch no. 36 in Souk Ould Mina, a market for reclaimed materials in Casablanca.

MOROCCO

09

Ele Mun interrogates the London Plan team's Circular Economy Statements and compares its ambitions with what's happening on the ground, in a reclamation yard in south-east London.

UNITED KINGDOM

11

Nikitas Papadopoulos visits Glasgow Wood Recycling and speaks with Alex about the network of social enterprises in Scotland and its implications in the reuse market.

UNITED KINGDOM

13

Phillip Tsang in conversation with Florence Tang, who manages a reclamation yard in Hong Kong, about how government policies have influenced the yard's inflows and outflows.

HONG KONG





Olympic park, London, pre-2012.

Reclamation of Steel Buildings on the site of the Olympic Park in London

Igor Gola in conversation with
David Rose

Portal Power

Steel Portal Frame Reuse

Portal Power in Olympic Park In London

**“I think half of the steel
buildings on the site of the
Olympic Park could have
been saved.”**

PORTAL POWER
NEW & PRE-USED BUILDINGS

London's bid for the 2012 Olympics became an embodiment of the UK's drive for sustainability. The Olympic Delivery Authority set an at-the-time ambitious target for 90% of demolition waste to be either recycled or reused. That target has been exceeded and a figure of 98.5% was achieved.

However, out of the 434,000 tons of demolition waste, only about 2,000 tons ended up being reused, with the vast majority ending up being recycled. The low reuse rate had to do with the socio-political climate at the time, the contractual relationships between the contractors and governing bodies, as well as logistical shortcomings.

One of the few reuse success stories to emerge from the development was the reclamation work done on site by Portal Power, who were hired by a Tier 2 contractor to dismantle two steel portal frame warehouses. The following interview with David Rose describes the current issues surrounding structural steel reuse, as well as the challenges associated with working on a project of this scale.

Interview conducted by phone

21 January, 2021



Portal Power's storage facility in Kenton, Stowmarket.



CE marking (the letters stand for Communauté Européenne) indicates conformity with health, safety, and environmental protection standards for products sold within the European Economic Area. For Structural Steel, CE marking became mandatory in EU in 2014. Steel manufactures, and not the resellers, are the ones to declare their product CE compliant. Modifications to the steelwork could lead to the product losing its CE marking. Getting reclaimed structural steel CE marked, is a costly process, which involves a series of destructive and non-destructive tests to account for its material properties and chemical composition.

Portal Power

Igor Gola How long has Portal Power been in business?

David Rose We have been doing second-hand buildings since 1995, and we only recently have gotten into new steel buildings as well.

IG Do you operate primarily across UK?

DR We sometimes sell buildings in Ireland, although other than that the only building we have sold abroad was actually in Barbados.

IG Is majority of your business focuses around new or reused steel buildings?

DR It is around 70/30 second hand to new steel buildings.

Steel Reuse

IG What is the biggest challenge you come up against today, in regard to structural steel reclamation?

DR The biggest challenge right now is imposed on us and have to do with CE marking. We are not even meant to drill a hole or paint a second-hand building, which causes a lot of issues for us. It's a rule that should not have been put in place. To be honest, they don't have enough people to police this anyway. I suspect it could have to do with people who manufacture CE marked buildings not wanting competition.

The country says it wants to be green, yet they put these huge obstacles in the way of actually getting there.

IG How much treatment does reclaimed structural steel tend to go through before it is reused?

DR The cosmetic fixes like sand blasting and spraying constitute the majority of treatment.

IG How can you guarantee structural strength of reclaimed steel elements, how do you test for that?

If the construction is within a farm context, we would use software in house to calculate loads. In a more industrial setting, we would

CE Marking is a result of exhaustive tests of the component by the manufacturer. Components, which are modified by a reseller could have different structural or chemical properties, and therefore lose the CE marking. This directive can create absurdities, such as the ones described here by David.



Agricultural Spec, Steel Portal Frame building currently put up for sale by Portal Power for 45000 £.

Grade	Minimum Yield Strength	Tensile Strength	Minimum Elongation at Fracture
S235	235	360 - 510	26
S275	275	410 - 560	23
S355	355	470 - 630	22
S450	450	550 - 720	17

There are four widely recognized steel grades, and their classification is Dependant upon their structural properties. The difference in material characteristics has to do with a specific material composition.

be much more likely to seek help of a structural engineer.

IG You offer a service of Portal Frame building relocation – are you able to transport a structure from one place to another and treat the salvaged structure on site?

DR It really depends on how much alteration is needed. Relocation implies not much alteration at all. If serious alteration is needed, it might not be feasible to do everything on site. Although doing it on site gets around the CE marking.

IG Steel appears to be an inherently long lasting material, is there any noticeable degradation over time?

DR People will tell you that there is degradation. We tend to calculate all buildings as if they are 275 Steel, which they probably are anyway

IG It is clear that you see Portal Power's Role as an actor in a circular economy. Since reclamation of Steel Portal buildings could be considered an 'easy-win', do you see it becoming a baseline solution for disposal of these types of structures as the crackdown on carbon emissions increases?

DR It should be. There are other things that would make reuse of steel more favourable, for example demolition contractors were given tax breaks for reuse of steel rather than its disposal, and developers should be penalized if they do not. The issue is that you need to be more flexible to use second-hand buildings. It might be a slightly different to what you wanted. If your site is limited in size, it might not even make sense to opt for second hand. The councils have a directive. The government wants to be green, but they overlook second-hand steel. We have come across councils in Wales, which are much more proactive about using reclaimed steel, and much more at the forefront of the green economy. I have not found that in many instances in England. I did come across one instance in Suffolk, where the council required the developer to use a second-hand building – I have only come across this once, and it was 10 years ago. The government has failed to implement anything that would actively encourage reuse.



31st of December 2006

The development of the Olympic Park in London was a major undertaking, with numerous governmental bodies as well as private companies working together to transform an industrial site into the Queen Elizabeth Olympic Park. The works were completed in 3.5 years.



12th July 2012

A few years ago Cambridge university was working with Marks and Spencer to develop a new retail outlet. I have attended a meeting at Deloitte's in London and representatives from the government were present as well. I grew quite frustrated in a meeting with the naiveness of the purists pushing 100% reclaimed steel on the project. I have voiced my concerns that on a retail outlet it is not practical to use 100% salvaged steel, that 70% would be much more realistic. The Purists of course have looked at me as if they wanted to say "you just created x tons of carbon!". I do believe one needs to realistically assess the demands of the project case by case, you cannot wave a magic wand and claim that a second hand building will fit anywhere.

Portal Power in Olympic Park in London

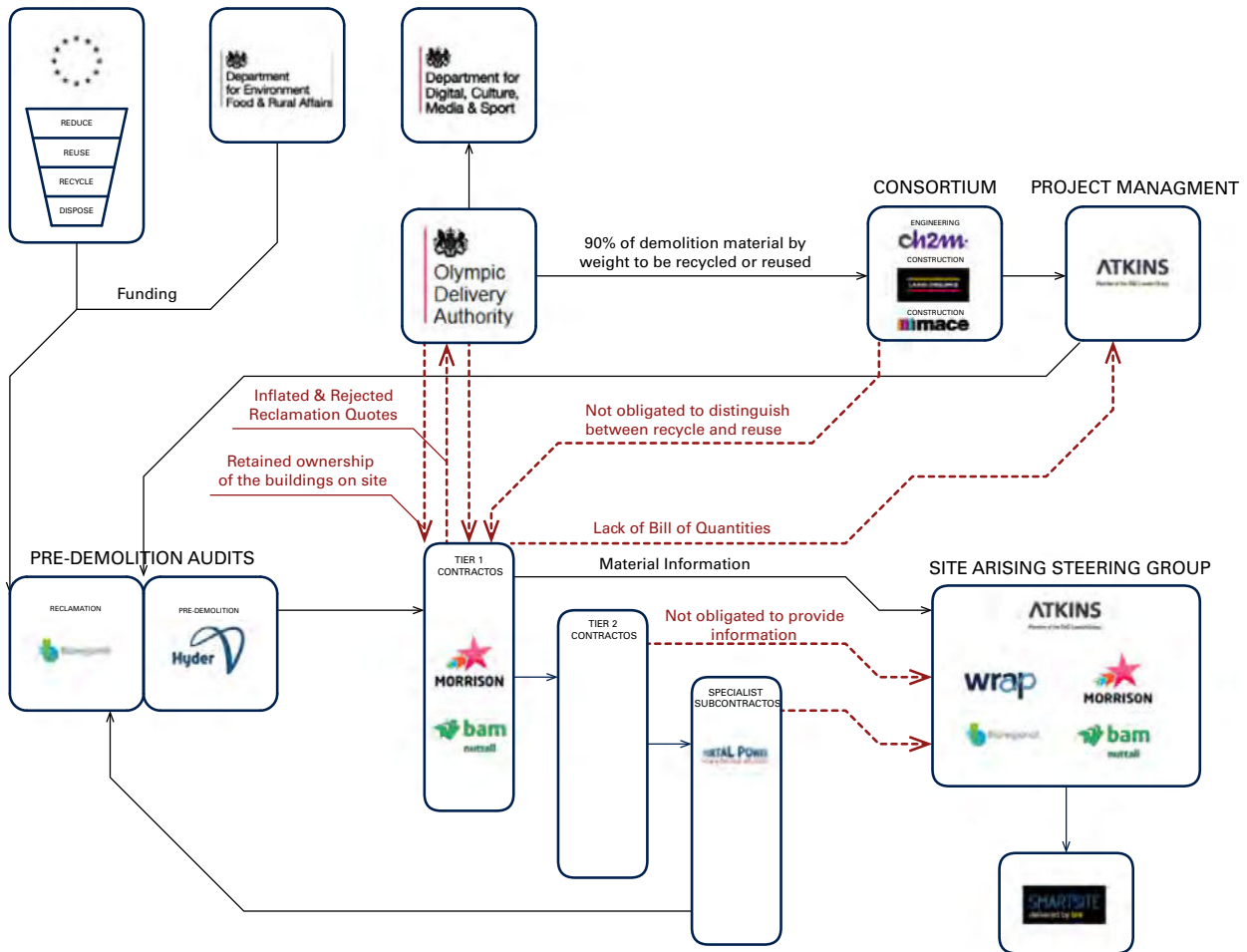
IG Portal Power has been working on the site of the Olympic Park as one of the few specialist subcontractors, who specialize in reclamation. The construction of the Olympic Park has been widely regarded as a green development. The reality is that, while the recycling rates were well above industry standard, very little reuse actually happened on site.

Some of the reports published by BioRegional name Portal Power as one of the specialist subcontractors, who dismantled some steel portal frame buildings on the site of the Olympic Park in London. Could you tell me how many structures have you dismantled?

DR We have dismantled two structures – one was a 3000m² FedEx distribution warehouse, and the other was almost 7000m² and belonged to Boots.

IG How would you define your role as a specialist subcontractor on a project of this scale – have you also participated in an advisory manner?

DR We have worked together with BioRegional when they were conducting reclamation surveys. We were advising them on which steel buildings could have been sensibly reclaimed. BioRegional was hired as a consultant by the Olympic Delivery Authority, to provide advice on green issues. In the end I think a lot of their advice was ignored, and most of the buildings were trashed.



The construction of the Olympic Park required an extensive network of contractual relationships between the planning bodies and private companies. The diagram above identifies a number of shortcomings, which inhibited reclamation during the enabling works.

Reclamation survey identified 34 Portal Frame buildings, which could have been reclaimed. 3 have been reclaimed by owners prior to compulsory purchase orders of the land, 1 was reclaimed by a tier 1 contractor, and 3 by specialist subcontractors, bringing the total to 7 out of 33. Portal Power has reclaimed 2 structures, which have been reconstructed in Lincolnshire, UK and in Ireland.

Portal Power were able to sell and reconstruct the ex FedEx building for 170 000 £ in Lincolnshire. The company made a profit after cost of the work and price paid to the demolition contractor.

IG I am curious about the network of contractual relationships on a project of this scale. The tier 1 contractors – Bam Nuttal, and Morisson – were hired by the Olympic Delivery Authority, they then hired their Tier 2 Contractors, who then hired specialist subcontractors such as Portal Power, is that correct?

DR Yes, we were working through McGee, who were the tier 2 contractors. I think the reclamation work we have done was more of a showcase – we have removed two large buildings in the same area, and it appears as if they decided they could get away with not doing anything else. At the time they made a big thing about what we were doing, and it seems like everything else was just being skipped.

IG Has the ownership of these buildings transferred to you when you agreed to undertake the reclamation?

DR We have paid McGee for the buildings, and we took ownership of them.

IG One of the reasons for so little reclamation was the fact that the prices and schedules for reclamation were often provided by demolition contractors with no experience in salvaging. Namely a BioRegional report states that one of the contractors has quoted a figure of 150 000 £ for a reclamation of a steel portal frame building, whereas a specialist subcontractor has priced the same job at 50 000 £. Can you think as to why is there such a large discrepancy?

DR The Olympic park project was quite unique because of its scale and the time constraint. The demolition contracts were likely overestimating to ensure they can deliver, the less experience one has, the more inflated the prices are going to be, because the more difficult it is to assess. It is also possible for people to get a bit more opportunistic because they know the deadlines are tight.

IG Has being a part of such a large and unique development changed the way in which you had to work on site?

Definitely – the health and safety side of it was a little bit crazy. I remember it being especially challenging on the larger Boots building. For the stripping of the roof, we have netted the entire



The FedEx distribution warehouse, previously on the site of the Olympic Park, was dismantled in 2007, and is now used as an agricultural plant store in Lincolnshire.



A 2008 interview with Portal Power, conducted by BioRegional reveals that the dismantling of the FedEx Building took 3,000 man-hours, whereas that same job could have been completed in 2k man-hours, if it were not for the logistical challenges associated with the project.

DR structure, and put handrails for workers' safety. Then health & safety came along and said that we were not allowed to strip the roof, with just the nets underneath, that we needed the workers to be on wires as well. Their argument was that a net is not a primary safety measure, but a secondary one.

There is an anecdote to perhaps explain the over-the-top safety measures. A lot of Bam Nuttal's administrative offices were on site, close to the buildings we were salvaging. In the first couple of weeks McGee, who were working just over the fence from the offices, had one of their excavators collapse and crush one of the oxygen tanks, which went through the fence and all the way up the road between their offices. As a result, everyone had to stop working on site – nothing more was done that day, we were just told to get off site. You couldn't even go for a cigarette without a full PPE – helmet, glasses, gloves, everything.

To go back to your previous question about inflated prices, we might have been a bit naïve pricing the way we did, we certainly did not anticipate the health and safety craziness, maybe the other contractors were closer to the mark than we were.

IG **What do you think could have been done better, what could have happened for more buildings to be saved?**

DR I think half of the steel buildings could have been saved. The problem on a project of this scale, is that when you take down a lot of buildings, you would need to account for the storage of the components for a year or two until you can find a buyer. Most big contractors do not have the means to do so and to find clients. These big projects - they need more thinking outside the box really.

IG **It is somewhat clear to me that they didn't employ specialist expertise early enough, and when it came down to it, they were in a rush and under pressure to complete everything on time.**

DR I would definitely agree with that. They were on site 3 years before the Olympics – the issue is that they did not foresee the quantities of the contaminated soil they would have to deal with. I think that soil has made Bam Nuttal a fortune. There was a rumour that early assessments assumed 50 m³ of contaminated soil and they have



put a steep pricing on its treatment per cubic meter, it then ended up being thousands and thousands of cubic meters of soil that were contaminated.

IG When working on the site of the Olympic Park, how many people did you have on site at the time?

DR Could not have been much more than a dozen of people working on site at a time.

IG The two buildings you reclaimed now live in Lincolnshire and in Ireland. Could you walk me through their journey?

DR Both of these buildings were delivered directly to the customers, we did not need to store them at our facilities at any point. The ex FedEx building was reconstructed by us, whereas we did not have anything to do with putting up the building in Ireland, we just delivered the components.

IG A possible benefit of a specialist subcontractors with experience in reclamation, is client procurement. It would entail a possible removal of the on-site storage bottleneck, as components can be delivered from one site to another directly. Have you had the customers already before you started dismantling the warehouses?

DR In this case, we did not really have either building sold before we started, although it worked out well. We would have been able to find customers for another 10 buildings easily though.

IG How much of your business consists of selling whole buildings, and how much comes down to components?

DR It really depends on the size of the building; we do often end up splitting larger ones up. We just had a project which had a footprint of about 100m by 30m, we ended up selling it in 3 pieces. It comes down to marketing it with various options.

The FedEx Warehouse dismantled by Portal Power is currently used as a agricultural plant store in Lincolnshire in England. The Boots building is currently used by a transportation company in Ireland.



Reclaimed Structural Steel Components in Portal Power's premises in Kenton, Suffolk.



IG What are objectives for Portal Power? Do you see the company expanding in the future?

DR No, not really. I am 69 now and none of my family are involved in the business. I have built up a lot of specific knowledge over the years, and I could see myself moving more into a consulting type of role. I think reuse of buildings is going to grow, as it should.

• • •





Outside Resirqel, Oslo.

A Lone Reseller

Frida Hansen in conversation with Resirqel

Resirqel AS

CE Marking

A Green Promise Land

Catalogue & Stock

“There is a lot of small scale reuse that happens in Norway on pages like Gumtree, but we are trying to industrialize the process and that’s why we are interested in policies and legislation.”

Resirqel’s team. Right to left: Olav Sunde (Partner), Martin Eid (Partner), Lasse Kilvær (Partner/CEO), Lene K. Westeng (Architect) & Audun Øyri (Communications Strategist)



As a nation of oil and natural resources, the welfare state of Norway has a population with high average BNP & Welfare. Consequently, individual consumption and waste production are second largest in the world on an individual level and credible numbers show that renovation takes place as frequently as one out of three households every year.

Taking to account this high rate of consumption one would think that the reuse market would be blooming, however the reality is that organised reuse, reclamation yards and resellers of construction material are hard to come across. Comparing to countries like Belgium and England with an average of 120 reclamation yards, this research has only located 3 conventional resellers, making Norway an unconventional context for this research. This condition is the cumulative result of several variables surrounding reuse like social conditions, laws surrounding liability, uncertain market demand and lack of expertise. However niche, a small reuse market has been located riding on the wave of environmentalism and an effort in the Norwegian economy towards a circular model. So there might be a lack in the traditional reseller but there is a blooming interest in the idea of capitalising on reuse.

As one of these resellers, Resirqel AS, located in Oslo east borough, agreed to meet up for a chat. Their company identifies as a multi faceted material reseller. They work as an interdisciplinary company with expertise throughout the building industry. Their team of five are aiming at introducing reuse at an industrial scale, and participates in teaching and political lobbyism on a topic they believe to have been neglected for too long. I met with them in their small scale warehouse to discuss the current status of reuse, CE Marking, European politics and confusion around the current vocabulary in the Norwegian reuse market.

Interview conducted in Resirqel Office, Oslo
15 October, 2020



CE marking is present on windows that were ordered wrongly and salvaged by Resirqel from a construction site. The mark has caused confusion in terms of construction materials and reuse in Norway. CE marks on construction materials are usually present on external packaging, meaning that the material has no way of proving qualification once it's de-constructed and re-entering the reuse market. The law prevents proper development in the reuse economy as interpretations of it lies in the beholder.

Resirqel AS

Frida Hansen **Can you start off by telling me a bit about your team at Resirqel?**

Rerirqel (Martin Eid) We are currently a team of five, where everyone has quite different educational backgrounds. I am a contractor and carpenter, Lasse and Lene are architects and works with integrating reuse in design projects. Olav is an economist and has previously been involved with property development and Audun, who currently works on logistics, stock and material cataloguing, has a background in global development studies.

FH **I would say that your broad expertise makes Resirqel atypical in comparison with most resellers in Europe. Could you elaborate on the evolution of the company?**

RQ We started Resirqel as a concept in 2013. It then existed in parallel with the contractor business I was running, and it was supported financially by a state innovation program to conduct a physical investigation of the reuse industry. We aimed at answering questions like what material was out there, what it takes to de-construct in a gentle manner, storing possibilities and what distribution and sale might look like. We are doing groundwork through demolition, salvage, storage and design projects which has allowed us to see more clearly where the industry must adapt in order to introduce more reuse. This has led us onto working with research, law and legislation, especially because European laws surrounding CE marking is making most salvaged material illegal to build with.

CE marking

FH **You say that there is an almost-illegal grey zone in EU politics that prohibits reuse to be executed on a larger scale, why is that?**

RQ Based on EU legislations, all building materials need a CE mark that proves the material integrity of the material. It is evident to us that different countries are interpreting this rule differently in regards to second-hand materials, and that Norway is strict in this interpretation. We are trying to influence politicians to understand that CE marking should not be required on used materials because we as resellers can't satisfy the requirements of production as we don't know how or when materials is being produced. It is impossible for resellers to offer the same amount of guaranty on our material. It is a shame that material should a



Pilot Project

Kristian August Gate 13, a project that has been aiming at taking risks and experimenting with reused material. The developer, Asplan Viak, has taken full financial responsibility in terms of guaranty without CE marking. Resirqel has contributed with sourcing composite steel/concrete beams from the old government quarter (demolished in 2018).



Top Right: Reuse-Bank, is a solution for contractors interested in engaging with reuse. They offer temporary storing of valuable intact building materials and are placed on building sites next to waste containers.



YouTube title (translated from Norwegian): Finds valuables worth millions on construction sites. The YouTube video was made by real estate developer KLP Eiendom to showcase their collaboration with Resirqel showcasing their effort of working towards a circular economy.

Due to high land/letting prices storage is one of the main reasons for why the organized reuse sector is small in the urban context.

With high income comes high consumption, even in the construction industry. As Oslo has experienced expansion and renewal since 2008, waste production from the construction sector has been on the rise since the early 1990s. This resonates well with Norway where 11 million tonnes of waste yearly is processed through the State Coordinated waste management system. From this, only 0.8 percent will end up directly reused, whilst the rest will be incinerated, recycled or sent to landfill.

go to waste due to this. There is a lot of small scale reuse that happens in Norway on pages like Finn.no, which practically is illegal, but we are trying to industrialise the process and that's why we are interested in policies and legislations. We want to show how our process of reuse can be repeated and carried out in a large scale, legally and with full documentation.

FH How are you able to influence these laws surrounding CE marking?

RQ We need to push the legislative power for allowance of interpretation of the EU policy, exempting second-hand material from the market. Last year, we delivered a report called Responsible Use of Reclaimed Construction Material, where we mapped out pilot projects locally and internationally, we did literature searches on reuse and we went through some specific materials and their reuse-potential. In the report we try to describe today's reuse practice and what infrastructure is needed in order to expand it further.

A green promised land?

FH It seems that a lot of companies in Norway want to be associated with the circular economy, what is your position to this?

RQ The government wants Norway to be a leading example in the shift to a more circular economy. Norway wants to be the best in class. In that regards, we have never had a problem finding big companies that want to collaborate with us. Almost all the big contractors and developers in Norway knows about us by now and they request our competency in order to state that they are working in a green way.

FH You have been pushing the boundaries of reuse through big public pilot projects, like Kristian Augusts Gate 13, but you don't seem to have a lot of stock in house, how is that?

RQ We only have about 10 percent of our current stock in house. The rest of the stock is still in buildings ready for demolition. We work with both construction and demolition companies so therefore we can salvage materials directly from demolition sites and bring them to new projects without having to store them. This is possible because of our wide range of competencies within the company.



In the office and warehouse of Resirqel: Industrial kitchen heating lamps in the foreground of neatly stacked window frames with glazing. The frames reveal traces (in gray patching) of the deconstruction process.



Leather seats from an old diner has been stocked at Resirel's office for over four years. They show an example of how difficult it can be to reuse objects of a non-generic nature.



The warehouse is used for components in particular good state. Two in house designers/architects can integrate the specific forms of these parts into design projects.

Resirqel has a unique position in the current Norwegian construction and reuse market. Combining the salvage dealership with an architectural design and property development practice is a business model unlike many resellers in the continental European context. The model can resemble the one of Rotor and both companies are well aware of each others existence.

FH The word *gjenbruk* is frequently used in Norway when reading about reuse, can you explain the difficulties in regards to this multi-facet word?

RQ In Norwegian, the accurate word for reuse is ombruk, but the word gjenbruk is like an umbrella word for reuse and recycling, and translated to English they both mean re-use. We therefore think that the word gjenbruk should be banned. Because most businesses can easily green-wash themselves by claiming that they work with reuse whilst they actually are doing recycling. The biggest waste sorting company in Norway, Norsk Gjenvinning, is actively hiding behind the word gjenbruk promoting their growing interest in reuse whilst they really only are working with recycling.

Catalogue & Stock

FH You seem to have a large range of materials that you work with, was that a purposeful decision?

RQ We are not specialised in one material. We are always working on architectural projects and we are in need of as large range of materials possible in order to offer that service. One of our architects always says that if it would have been easy to just take materials and upload them on some kind of portal for resale, it would have been done 30 years ago, but it is not that easy. There is a challenge in terms of supply and demand and where there is no demand, we try to work towards using the material in our own design projects, whether that be a house or directed towards developers.

FH How do you assure quality in the materials?

RQ We don't do any testing ourselves, so we outsource competencies on specific materials for strength testing, surface testing or chemical cleaning. Locally, we have good collaborators and experts so that happens very smoothly. We also usually deal with recent demolition projects and building materials, so our stock is recognizable and consists of components like triple glazed aluminium frame windows, hollow concrete elements or stainless steel components that we are familiar with and can easily find information on.

FH So you guys work on a pretty tight schedule when it comes to material flow?



Waste bags: a flexible form of container and a common typology of waste collection in the city. (The UK-version is the Hippo Bag.) The bags can be ordered to home and must be placed on the sidewalk or in parking spaces. As one out of three households undergo renovation yearly, the bags are a common sight in the urban scene.



Central waste management station in Oslo. The management of waste is well organized through several waste facilities around the country, Oslo alone having 26 centres in different scales open for the public. The waste system is supervised by the government and the system is well integrated in the public culture. The image shows one of the public drop off stations where containers are sorted by material. Once here, 60 percent goes to recycling and 40 percent to incineration. Only 0.8 percent of the waste ends up being reused.

RQ That depends on the projects we work with, but we have at any given time an insane amount of materials at hand. Every catalogue we have comes from demolition-ready structures that usually are many hundred square meters in areal.

FH **And how do you keep track of the stock?**

RQ We have developed a cataloguing software that we use to organise the best suited materials of the buildings we are working on. We obviously can not salvage everything, but if there is specific material we want to use, we try to incorporate it into our architectural projects so we are sure it will be used. In our physical warehouse, we usually only keep materials that are brand new or that we know have big potential. The windows over here (points at an area with 40 windows) were salvaged from a construction site as they were wrongly ordered and would be throwed. Because they were not used, they have their original packaging with CE Marking, so we know we can easily reuse them.

FH **How do you price the material?**

RQ We try to price everything at 50 percent less than the cheapest equal new material on the market. This depends on the material and their specific classification, but that's our main goal. We usually receive materials for free or for a small sum of money so we are able to take a position in the market where it will be profitable to engage with salvaged construction material.

Ninety percent of Resirqel's stock is with situ building that are yet do be demolished. Working as middle men between deconstruction contractors and construction contractors, they manage to keep costs of materials down. As their need for storage is low, costs are also saved on rent. Most of their material is at the same time given away for free prior to demolition, and by organizing these large direct moves, the price of their stock is as low as 50 percent of what the equivalent material would cost at market price. This asset distinguishes Resirqel from other reclamation yards in Europe where reclaimed materials usually are more expensive than new.





Reusable materials, Brazil.

A Shifting Culture

Amaya Hernandez in conversation with Arquivo x Luciano Santos

“We are the first of our kind in Brazil. Nobody here is reusing materials like we are.”



Perdo Alban Natalia Lessa undertake Arquivo's first deconstruction project: an old English school planned to be demolished and made into luxury flats.

As the pandemic was in full force throughout the duration of this research, the majority of the following interviews were conducted behind screens.

Natalia Lessa and Pedro Alban discussed with me their architectural salvage practice, Arquivo. Operating since 2020, Arquivo has been developing and adapting material reuse practices to suit the Brazilian context. Forming a network of architects, designers, and craftspeople, Arquivo has managed to situate itself within the existing demolition practices of Salvador and are managing to deconstruction and resell architectural salvage. Although they have not been in operation for long, their trajectory is promising as they pioneer architect led material salvage strategies in Brazil.

Alongside the conversation with Arquivo is a whatsapp chat with an architect based in Florianopolis, southern Brazil. With little prompting, Luciano Santos spoke about the bottlenecks and stigmas he identified around the notion of material reuse in architecture with a tendency to end every thought (i.e voice note) with an unyielding : "It's not worth it". The subtle affirmation that researching material reuse in Brazil was a waste of time was echoed not only by Luciano but by many of Luciano's colleagues and friends. Despite the stubborn negativity which at times veiled the hopes of material reuse in Florianopolis, I was able to find business owners whom not only currently work with material reuse, but have been working in the field for many years.

Conversations with material resellers in Florianopolis, such as Valdir from Alumetal, are dispersed throughout the following chapter as well. Through this juxtaposition of interviews, I intend to highlight the stage in which Brazil finds itself today in terms of material reuse, challenging notions of impossibility with the people making reuse possible.

Interviews conducted via Whatsapp, Zoom, and phone
Nov 2020 – Jan 2021

NBR: Brazilian National Standards

These norms are not mandatory as they are established by a private institution (Brazilian association of Technical Norms – ABNT). However there are some laws and regulatory standards that require compliance with some NBRs. The laws and regulations currently required by law are the ISO 14001 (Environmental Management System) and OHSAS 18001 (Occupational Health and Safety Management System). Although laws and regulations are seen a tedious by many, and are often ignored. This means the use of material are less regulated than in many other countries, giving an upper hand to the reuse of materials as many countries struggle with reused material's integration into new projects due to regulations such as CE branding.



Natalia Lessa on site during deconstruction. The team spends roughly 30 days per house in which they take inventory, assess quality, deconstruct and sell materials on site.



Arquivo workers dismantling wooden ceiling panels.

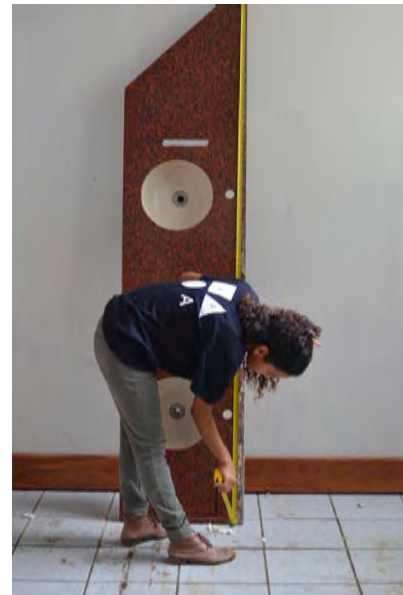


Photo: Natalia Lasso / Arquivo.

Luciano Santos There isn't a labour force equipped with the proper know how anymore to know how to preserve and restore ... It's not worth it. We have to remember that here in Brazil, in order to avoid people doing something absurd, the construction permits sometimes have rules that do not facilitate building. So the large portion of people build without permits. So finding the exact number of construction and reformations happening is very difficult. New constructions ask for more permits than renovations so maybe this number will be more accurate. If you put something in your house, you get new materials and then you get reclaimed materials, the difference between them is very big. It's the same if you paint one room one colour you have to paint the rest the same colour, because the ones that looked okay, in comparison now do not. It's complicated. For example air conditioning. Today they are all made in China. If a piece breaks in the air conditioning, it's not worth fixing. If I spend money on fixing the compressor and then later another piece breaks, I prefer to put in a new one that lasts another 5 years. This is an example that a lot of the time it's worth just getting a new one. I could have taken out all of the materials from Bruno's old house and designed a new house with these materials. It would be amazing, because I now have all of the windows, all of the doors from the same house that already follow the

Amaya Hernandez
Pedro Alban

Labour

Does Brazilian culture facilitate the reuse of materials?

There are some things on our side here, most importantly that construction workforce is much cheaper than in, for example, Belgium. We hope to improve this gradually, but our workers are being paid as the lower knowledge construction worker because they are not people that work with cement, they are not people that can cut wood, they are workers that usually do demolition and carry heavy weight. It's a cheap work force so it's somewhat easier to do deconstruction here in that sense.

The other thing is that there is no legislation regarding the material performance of windows and doors, etc. It's less strict than in the EU. So for windows and doors, there is no difference between a window made in the 1970s and a window made now. I don't know any office that has insurance so this is something that makes it a lot easier on architecture offices to prescribe reused materials because there is less responsibility. Generally it's accepted here that things can go wrong but if it goes really wrong you generally blame the contractor but never architects and rarely material suppliers. We are selling wood mostly, we are not selling materials that are at risk of not functioning but it's not as risky a situation as it is in Europe. So several things are easier here.

Strategies

AH Do you do both the material reclamation and the design integration?

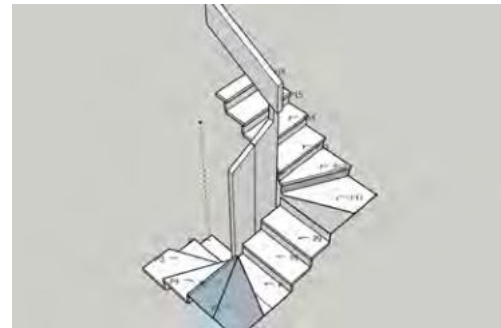
Natalia Lasso

We are trying slowly to open a project arm in our company. The way we manage to do this is if we get an offer to do a project we invite a friend who has an architecture office, so we do a partnership in a project. This way we participate in the creation and use the reused materials from the stock that we have, and they continue drawing and all of the things we don't have time now. It's also good that we can show that we can do projects with different styles with reused materials. We are doing two projects with two different offices which have two different styles so it's exiting to show people that reuse doesn't have to be specific style
I think the way we can deal with this situation is we can



Consultancy: Reclaimed wood that has been designed into to a new construction project. Arquivo's workflow allows them to scout and prescribe materials to architects and designers before reaching the final design.

My name is Julia: "We started our first consultancy process, this time for ARQGRAF, Marta Dória and Júlia, who decided to incorporate a series of wooden windows from four different locations in the design of a new residence. In addition to the frames, we will supply the material for a deck and part of the overlapping electrical installation. The consultancy takes place from the current moment (study) until the details of the project – simplifying the creation from the existing parts. We thank the architects and clients for their courage." – Arquivo



3D model made by the Arquivo intern, Flor. Arquivo is able to send not only precise measurements but also 3D to interested parties making the integration of reused materials in the earlier phases of the design stages possible.



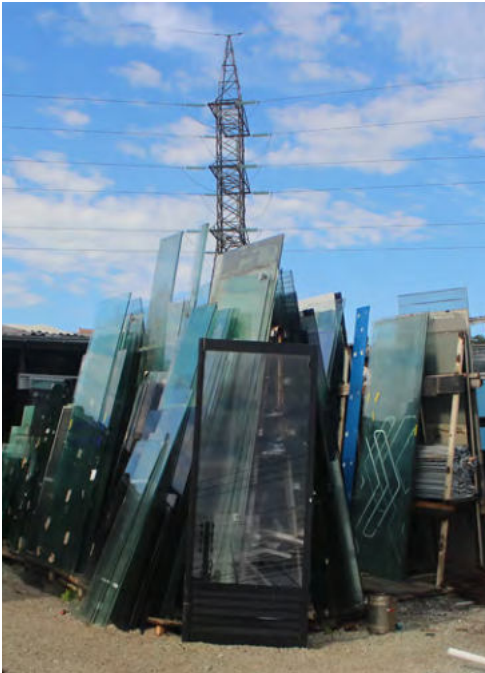
New project – old material: Arquivo works closely with woodworkers interested in using reclaimed materials. Not only for their own projects but as reference to their clients as well. In this project, doors were made from old floorboards and all the bathroom counter tops, made with solid wood remaining from the old roof of the previous house. Architects: Daniel Sabóia (tantocria), André Souza, Nina Barreto in collaboration with Arquivo.

same dimensions, and this new house that I will build, I will have to convince the client, make sure he likes the doors, measurements, proportions, materiality. The work for the architect increases. But without a doubt, in the future, we won't have an option. It will be way cheaper to reuse materials. It won't work if you take an old window and put it in your house, even if it's noble wood because it is too big or it is too small. So you have to send a carpenter to do the project. For the carpenter to install your reclaimed window, the hours of his labour will end up being more than the material itself. In the future, when wood becomes more expensive, they will start reusing everything. But at this moment they don't want to reuse because reclaimed wood has screws, nails, that if not taken out will break the machine. They prefer saying "oh for the same price I make you a new one" because new wood doesn't have any of these problems, it's easier for him, his workflow is already established, he would spend an hour making the window new than a day renovating an old one.

So why do stores like Alumetal exist? These people usually have two businesses. If they have a lot of aluminum windows and they don't sell as a window, they sell it by weight of the material to be recycled. Same for windows, etc. And it's very small amount, what they have in Alumetal. They have been there for 20 years, it's a really small percentage of construction projects that pass through Alumetal.

manage to sell our stock in a 50-60 percent discount of the price of

- PA Also architecture is a really under paid job in Brazil, and not very lucrative, in general people are more inclined to pay expensively for a product than a service. So people are much more disposed to pay 8000R in a sofa than an architecture project.
- AH Do you also integrate materials on projects that aren't yours?**
- PA Yes, the biggest sales we made and the core part of what we are managing to do is via consultancy. If it isn't our projects, architects, who are mostly friends at this point, send us a project in the very early stages and we make a PDF saying what reused windows could go where, what reused doors could go where etc. We take their project and make an assembly of what we are deconstructing. Also because we are selling directly on site, it's better for the clients in terms of shipping. We make individual sales but I think that the bigger ones are always linked to an architect or to someone designing a project. For example, we've managed to sell around seven pieces of tempered glass; three were for self-constructions and the rest we prescribed them on consultancy. Even though doing projects is very underpaid but we get some money selling the material so it's worth it for us to do the consultancy for free.
- AH Is your strategy to target architects more than individual clients?**
- PA One strategy is also to convince the clients to include reused materials in their projects and not the architects
- NL And sometimes the architect is already interested in our project and they come to us as well
- AH How many projects have you been involved since starting Arquivo?**
- PA We've personally dismantled three projects but from these three projects, the sales are much larger so I think it's probably close to ten the projects and houses that we have or are about to fit our material in.



One of the many clusters of materials at Alumental in Florianopolis Brazil. The abundance of glass is due to the fact that once glass is cut to size and tempered, it is impossible to re-cut without shattering the glass.

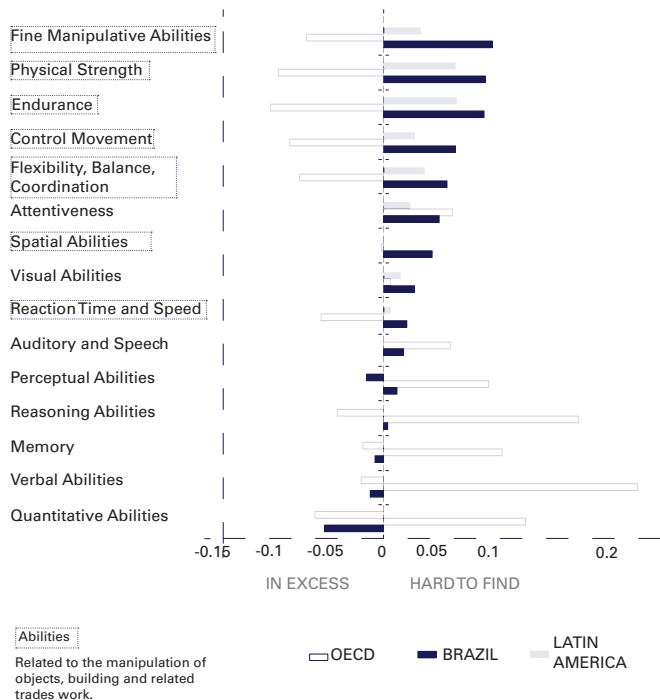


Sparked by a reclamation yard in the city of Curitiba, Alumental is the largest material reseller in Florianopolis and have been operating since 1999. Although Alumental has brought more awareness to the re-usability of materials, it is still one of four material reuse yards in Florianopolis.

Ability Shortage in Brazil, Selected Latin American countries and OECD countries.

“.. there are still some low-skilled occupations that seem to be in shortage in Brazil. This includes house builders, bricklayers, stonemasons, carpenters, floor layers, plumbers, precision-instrument makers and repairers, handicraft workers in wood, textile or leather, miners and quarries, shoe making machine operators, chemical products plant and machine operators, mechanical machinery assemblers, railway operators, taxi, bus, tram and truck drivers, as well as garbage collectors, among many others.” (OECD Library – Getting skills right: Brazil)

This data indicates that skills required for the material reuse market to thrive are currently lacking in Brazil’s labour force. Appropriate training must therefore take place in order for the advancement of material reclamation in Brazil.



- NL Sometimes we also get really lucky. We got about ten or twenty windows from this building that had already been demolished and we got the windows and a week later we found someone who took them all, so sometimes we get people who come to us and we find someone to sell to quickly.
- PA This particular client had the dismantled roof in her courtyard, and she wanted someone to organize it and sell it and in return instead of sharing profit with her, she wanted furniture for her house. Our biggest partner right now is our friend who has a wood workshop who wants to work with reuse. And this is one of the reasons we are really working well with wood. We have someone to indicate if people want to make something out of what they buy with us. It's easy for us to sell wood because we know that someone will make it into a custom-made item, like furniture or a piece of construction. Currently we are trying to find someone who will do this with stone, and someone who will cut it to dimension.

Materials

- AH What was an example of something that ended up not being a good idea removing from a construction site?**
- NL Porcelanato, it's heavy, large pieces of ceramic. It's really hard to take a whole piece of this. The material is expensive when it is new, so it's probably something we could sell for a good price but the labour is too much. We haven't found a way yet to take out perfectly without breaking it.
- AH Through my research I've found that the shift from clay mortar to cement mortar rendered the reuse of tiles incredibly difficult...**
- PA They have developed an even stronger mortar which is used for floor over floor. So if you have a porcelanato which is super smooth and you want to put another porcelanato or another tile over this floor, there is a mortar that does it. This mortar that is a whole other level of stickiness because it can adhere to straight perfect surfaces. This is used a lot in apartments which is also a structural problem because you are adding floors over floors and it's something that is really heavy. It's double the problem.



Research document highlighting amount of ceramic tiles Produces by Portibello Tile Factory in Tijucas, Santa Catarina in comparison to an existing tile reseller's stock.



Cementerio Dos Azulejos in Florianopolis, Santa Catarina resells used and overstock ceramic tiles.



Screenshot of a documentary titled "Made in Brazil" which highlights parts of the conversation around the difficulties of reusing ceramic tiles.

AH You mentioned that wood is a prevalent material you deal with but is there another material you guys are inclined to reusing?

NL Kitchen stone counter tops, these are things that we have managed to sell all to new projects. It's quite a hard thing because it is stone, it's not the easiest thing to put on a new project because of the specific dimensions but we have managed to sell all of them. We got some ceramic tiles but this was really specific because they were from Brennand (Francisco Brennand) he is a very famous Brazilian sculpturists, his father was the owner of a ceramic tile factory. If you go to Recife (State of Pernambuco) there is a Brennand museum. These were tiles that we could sell at a really expensive price so we could remove them and shave off the cement form the back. So even if the process was expensive, we managed to pay the costs but it was a one time thing.

AH Seeing as it's free, do you sometimes get materials from the bins as well?

PA It is something we do sometimes, the people that work with us also do it. It's a common thing, but a lot of the material get damaged. One time I saw a window but I didn't have a car and when I came back it was covered in rubble so even if it was still there it was impossible to take out It's not the most effective process.

AH It's a shame there isn't a better system to recover these materials seeing as it is already separated in a way.

PA Yes, it is but we don't have the culture, there isn't the demand for all the things that are being thrown away.

Stigma

AH So do you find any cultural stigma surrounding these reused materials?

NL I guess the clients that come to us they already think a little bit differently, but generally yes, of course. Regardless I think we are finding people that are okay with this.

PA We found out that even in Salvador which has this cultural stigma as a general rule there is still space for reuse. There is a limit to growth because there is a cultural stigma but we are finding that there are much more clients and architects

Norma 307, CONAM (National Environmental Council)

This Resolution states that all demolition waste is the responsibility of whoever produces it. This 'hands off' approach by the municipality in terms of material handling has created a network of private companies which disperse potentially reusable material not only all over the Island, but the state as well. Though the municipality of Florianopolis does not provide much of an infrastructure in terms of collection and management, it does ask everyone involved in the process of waste collection to comply with the proper Environmental Licensing (LAO).

Municipality of Florianopolis states :

“ All demolition waste is the responsibility of the person(s) who produced it ”
 + Norma 307 do CONAMA +



01 Renovations // Refittings // Demolitions



02 Material Collection

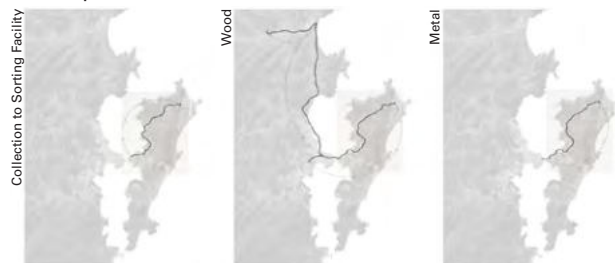


03 Sorting // Recycling // Redistribution



Argailha is one of many companies licensed to collect and sort construction waste, either to be recycled onsite, or dispatched to their respective locations.

Maps following the dispersing of materials through out the Island, post demolition.



A - B
 On site collection bin is transported to Argailha sorting center for sorting, recycling, and redistribution
 26.3km traveled

B - C
 Wood is sorted into noble wood or wood composite. Noble wood is relocated and used as kindle, often for ceramic production
 Wood composite is landfilled
 94.2 km traveled

B - D
 Metal is sorted and relocated to scrap yards in Palhoca, where it is melted and resold for re-manufacturing
 52.6 km traveled

waiting to play the game than we thought there were previously. We are even managing to sell toilets, even though we are selling them at a really low price but yes there is a cultural stigma, but for example, the first project, at the English school we dismantled, we made a proposal for them to use part of the wood we were removing into the new building, and the answer was “no way”.

NL Not yet!

PA Ah yes, it was not “no way”, it was “not yet”. So right now they want to say they were being sustainable by dismantling correctly and not demolishing the whole building but they were still not ready to insert reused materials in the new projects which will be luxury apartments.

PA At some point it was something that paid well to do projects that dealt with Carnaval. My aunt has an office that did a lot of scenography and pushed reused materials to projects that were not ephemeral. Some of the architects that worked with her have also done this so in a sense we have more examples of architecture built with reuse so this is something we are trying to set up a database or a catalogue of some sort. This catalogue is to inform other architects what kinds of projects can be done using reuse so in a sense we are interested in pushing policy but also pushing architects to show them examples of what could be done. My aunt also reclaimed discarded glass that was used as form-work for the production of polycarbonate. Because it was tempered glass they had to learn to cope with integrating existing dimensions into the projects being created.



JD If we don't go around picking up this wood, it will get burned or thrown away. Only idiots throw material away.

Future Plans

AH From here, what are your next steps?

PA The idea is to start here and then go to Sao Paulo and try to do this at a national scale but starting from here in Salvador. It is uncommon in architecture that a movement starts in Salvador because generally Sao Paulo and Rio are the melting pot of architecture, but they are too concerned with concrete. Now it's our turn to start something.





Reclamation yard, Chengdu.

Reclaimed Brick Industry

Jianghai Hu in conversation with Huang Tian & Li Lijiang

Huang Tian 黄天

Brick Reseller in Wenjiang, Chengdu

Li Lijiang 李力江

Contractor in Wenjiang, Chengdu

“Few local people are willing to do brick salvage work. A worker can earn 100 yuan from recycling 1000 bricks a day. But now it’s easier and pays better just to work in a restaurant.”



Li Lijiang and Huang Tian.

Huang Tian began to engage in the reclaimed brick industry in the early 1990s. At the same time, he also provides demolition and construction waste cleaning services.

Li Lijiang began to work in the construction industry in the 1980s. Li started with brickwork at the construction site, and became a contractor after 2000.

When I interviewed Huang Tian, he was playing cards with his partner and his son in the open space of the reclamation yard. Because we have met many times before this interview, the atmosphere of the interview is very relaxed. Our conversation mainly revolved around when he was engaged in the reclaimed brick industry, the current dilemmas faced by this industry, and the labor economy. Interestingly, Interestingly, he also talked about a lot of personal experiences, such as planned economy, southern speech, reform and opening up, iron rice bowls and layoffs, and how did these historical events have indirectly affected the reclaimed brick industry and people's views on the reuse of reclaimed bricks.

Surprisingly, Huang Tian's partner Li Lijiang is a contractor who has been engaged in the construction industry for 30 years. As he introduced, the use of reclaimed bricks has become less popular in the market because of the relatively abundant supply of building materials now compared to the 1990s. At the same time, he shared a lot of his personal experiences with me in the interview. He said that because of the dire financial conditions of his family, he had to travel from the countryside to the city to seek a livelihood at the age of 16. Later, through the introduction of family and friends, he learned construction skills from a master who was doing construction in the city. At the same time, he also gave me many detailed and interesting introductions to traditional Chinese apprenticeship and related etiquette. Of course, he pointed out the shortcomings of this apprenticeship.

Interview conducted at Huang's reclamation yard, Wenjiang, Chengdu
18 January, 2021



After the wave of unemployment in the 1990s, laid-off workers look for jobs.



Before the 1990s, most houses in rural China were built with rammed earth and wood.

those years

In the 1990s, a large number of state-owned enterprises had low efficiency and debt triangle occurred frequently. At this critical time, the restructuring of state-owned enterprises have become inevitable, which led to a large number of layoffs in the enterprises after the restructuring. According to China's statistical yearbook, before the wave of layoffs, there were 110 million employees in state-owned enterprises in China. In 1998, the number of employees in state-owned enterprises was 52 million, while the number of employees in collective enterprises, which used to be 40 million, dropped sharply to less than 10 million.

iron rice bowls

People usually refer to jobs in state agencies, the military, science and culture departments, and state-owned enterprises as iron rice bowls. People who work in these institutions believe that their jobs are very secure and will never face the risk of unemployment.

Economic reform and opening up

is a policy of internal reform and opening to the outside world that China began to implement at the Third Plenary Session of the Eleventh Central Committee in December 1978. In 1992, Deng Xiaoping's talk in the South announced that China's reform has entered a new stage.

The 1990s**Jianghai Hu**

When did you start to engage in the brick reclaimed industry? Under what social background did you begin to engage in this industry?

Huang Tian

I used to work in Wenjiang Shengzi company, but it was difficult for the factory to pay us because of the poor efficiency. As the factory shut down, we had to stay at home without pay, and then we had to choose to be laid off. Because there were too many laid-off workers in **those years**, resulting in intense competition in the labor market, it was difficult for us laid-off workers to find relevant jobs. You may also know that the original people think that in the state-owned companies are all **iron rice bowls**, are prepared to work in them for a lifetime.

JH Then why did you choose to be in the used reclaimed brick industry after you came out of the state-owned factory?

HT At that time, millions of people were laid off across the country, many factories were not hiring and competition for jobs was intense. We had to find another way to make a living by ourselves. I started to reclaim old bricks through the introduction of my relatives. Fortunately, at that time, the government had many preferential policies for laid-off workers to do business.

JH Was there a lot of demand for reused bricks at that time? Was business good?

HT Under the influence of **Economic reform and opening up**, people's personal economic conditions are much better, and many people in rural areas went to other places to work and then came back to build houses on their homesteads. In the past, in rural areas, houses were made of rammed earth and wood. On the other hand, considering the cost saving, many people choose to build houses with reclaimed bricks. At the same time, most of the bricks in Chengdu were produced in traditional brick kilns with low efficiency and insufficient raw materials, which made it difficult for the new brick market to meet the demand of construction projects. At that time we were buying more than 10,000 bricks a month. We made about 0.05 Yuan on each brick. In the 1990s, our average



During the period of planned economy, people exchange coupon for food in supply and marketing cooperatives.



Rice coupons from 1978.

Panned economy

is an economic system in which production, resource allocation and consumption are planned in advance. China's planned economy began in 1953. In 1992, after the 14th National Congress, the government decided to establish a socialist market economic system.

Food coupon

is a kind of grain purchase certificate issued from the 1950s to 1980s. The earliest types of coupon in China were food tickets, edible oil coupon, cloth coupon, etc.

salary was about 300-500 yuan. Moreover, the government has preferential policies for laid-off workers to start their own businesses. In those years, the reclaimed brick industry of old bricks was relatively prosperous.

JH Can you give a brief introduction to the economic background of this industry in the 1990s?

HT When I started in 1990, the business was good. Our country was still a **planned economy** at that time. The amount of food per month for each family is set by the government. We all need to use **food coupons** to exchange food with the supply and marketing cooperatives. Building materials were also in the system of the planned economy. The construction industry needs to apply for materials from the local government. If a family wants to build a wall or something, it was difficult to get cheap bricks from the market, so cheap old bricks had a good market advantage.

JH Where were the main sources of bricks in the 1990s? Has the economic system changed to promote the development of the reclaimed brick industry?

HT At that time, most of our bricks were recovered from urban demolition. The city changed a lot at that time. In the past, in urban area many buildings were one-story bungalows. With more and more people looking for work from the cities, the demand for housing was obviously increasing. At the same time, the state supported the development of real estate, and many houses in the old urban area was facing demolition. Of course, we also reclaimed bricks from the houses in the countryside, but very rarely. At that time, few people in the countryside built houses with bricks. We are also reclaimed bricks from some old factories and granary demolition. Many factories were built in cities by the state in order to develop industry. It was called that urban planning serves industrial construction. Later, some factories were faced with demolition because of poor efficiency. Some factories needed to be moved out of the city due to pollution problems, and they were also facing demolition.

Present**JH What's the market situation of reclaimed brick now?**



It's easy to find infrastructure built from reclaimed bricks in rural areas. This is a sink made of reclaimed floor tiles, bricks, ceramic and cement containers.



Reclaimed construction materials are also used in temporary facilities.

HT Now the old brick market is getting worse. We used to be able to sell six cars of old bricks a month. Now we can sell at most one carload of bricks a month. When the business was bad, many reclaimed bricks were put on our reclamation yard for several months, so now we seldom have to reclaim bricks ourselves. Now we usually reclaim bricks when customers need them. Now we are all doing new brick business with our friends.

JH **What causes this?**

HT Now brick factories are all mechanized, and the output and efficiency have been greatly improved. Moreover, the price of new bricks is not much different from that of old bricks, so most people choose to use new bricks. Now the price of old bricks is about 0.2 yuan, while the price of new bricks is about 0.3 yuan to 0.7 yuan.

JH **Where are reclaimed bricks usually used?**

HT Reclaimed bricks are mainly used in some invisible applications, such as pools, toilets, drains and temporary walls. But I also have some customers from rural areas who use reclaimed bricks when renovating their houses to save costs.

JH **Can you tell me more about these projects?**

HT For example, in rural areas, people have their own homestead, on which they can build houses at will. They usually work outside and come back to build their own houses. There are also some clients who do hotel in the countryside who will come here to buy reclaimed bricks. They said that there is a sense of age in the materials.

JH **Who does the salvaging of the bricks? Where do they come from?**

HT Few local people are willing to do brick salvage work. As I just said, a worker can earn 100 yuan from recycling 1000 bricks a day. But now it's easier and pays better just to work in a restaurant. The workers who are willing to work here are usually ethnic minorities from the surrounding areas, such as **Yi and Tibetan**.

JH **Will the government provide you with storage space?**

Yi and Tibetan

Two thirds of Sichuan area is composed of Yi Autonomous Region and Tibetan Autonomous Region.



A truck full of reclaimed bricks parks in Huang's reclamation yard. It's easy to find that most of the reclaimed bricks are not cleaned up.



Thousands of reclaimed bricks piled on the corner of the reclamation yard.

HT Yes, the site is provided to us by the government and we pay the rent. Compared with other places, the rent here is cheaper. The rent is calculated according to the truck parking space, 150 yuan per month for a truck parking space. Because the space here is large, it is difficult for one person to afford it. Some companies will ask us to provide a tax receipt. Before we had to pay a minimum of six percent VAT. Now, we only pay one percent VAT.

Labor Economy

JH **Can you explain why the demand for old bricks has decreased?**

HT Old bricks are rarely used in new building structures, and many site bricklayers (Shifu) dislike using old bricks because they are troublesome. If customers have to ask for old bricks, the labor cost will be relatively high. Of course, they seldom teach their students (Tudi) to use old bricks.

JH **Can you talk a bit more about why old bricks are not often used?**

Li Lijiang Generally, old bricks are not used on construction sites. The first reason is that the quality of old bricks cannot be guaranteed. The second is that it takes longer to build walls with old bricks than with new ones. For example, many mortar on old bricks are not completely cleaned up. If we want to use old bricks, we still need to take time to clean them again. Before construction, the treatment of old brick is more complicated than that of new brick.

JH **Can you introduce the relationship between master (shifu) and apprentice (tudi) on the construction site? How and how do ordinary apprentices find you?**

LL They are usually introduced by relatives or friends. We hardly teach people we don't know. I also learned how to build walls from my master (shifu). When I was a child, our family was poor, and there was no money for us to go to school. In order to reduce the burden on my family, my family introduced me to the master of the construction team in the village and asked him to take me to do the project together.



The traditional Chinese apprenticeship has been passed down to the present day. For example, in the teaching of carpenters, it is mainly through the intuitive demonstration of actual operation and physical display, supplemented by oral instruction. Apprentices should be able to understand the basic principles and laws of skills through observation and practical operation.



teacher worship ceremony
(拜师礼)

The traditional etiquette of teacher worship is usually completed by two apprentices and master. The relationship is second only to the relationship between father and son, that is, as the saying goes, “the parents who gave birth to me, the master who taught me.” In history, in some industries, once they enter the school of master, they are all disciplined by their master, and their parents have no right to intervene or even meet their son’s master.

jiaohui tudi, eshi shifu
(教会徒弟，饿死师傅)

If the master teaches all his professional skills to his apprentices, he may be cultivating a potential competitor for himself.

a teacher for a day is a father for a lifetime
(一日为师，终身为父)

It comes from the Taigong family education of the Qing Dynasty poet Luo Zhenyu. It means that a teacher who has only taught himself for one day should be treated as a father all his life. It’s like treating a teacher with the same respect as a father.

JH Is there a teacher worship ceremony generally?

LL Of course, compared with the present, our teacher worship ceremony at that time was still very strict. In the past, apprentices need to bring gifts when they visit their master. No matter how poor your family is, bring some gifts to show your sincerity. The master will also consider the situation of your family and won’t care whether the gifts you bring are valuable or not. In addition, there was also a ceremony to worship teachers at that time. For example, we need to offer tea to our master and kowtow. Then, the master’s family and other disciples witnessed the ceremony. Now the apprentices are introduced by relatives or friends, but the ceremony is much simpler. Let’s have a meal together to finish the ceremony. You can understand it as introducing his relationship network in this industry to his apprentice.

JH Where did the master learn his skills?

LL I learned it from my own master as well. Craftsman skills like this are handed down from generation to generation. The master explored the experience through practice, and then taught it to his apprentices. Of course, sometimes not all the skills are taught to the apprentices. There is a saying that “**jiaohui tudi, eshi shifu.**” (Teaching the tudi, starving the shifu).

JH How long does it take for an apprentice to start his own project?

LL This depends on the apprentice’s own understanding. Some people learn it in one or two years, while others can’t in four or five years.

JH I remember that we used to say that a teacher for a day is a father for a lifetime (一日为师，终身为父). Does this relationship last now?

LL It’s rare now. We don’t care much about it. However, like our master’s generation, they all treat the apprentices as their own children. We also treat master as our relatives. We will visit our master (shifu) on various festivals. If the master’s family has problems and needs help, we will go to help them immediately.



JH How did the apprentices begin to learn construction skills at the construction site?

LL Apprentices start from the most basic things. For example, cleaning, transporting bricks, or mixing cement mortar. After the apprentice has a general understanding of the construction process, he will teach the apprentice how to practice.

JH Can you describe how the shifu-tudi apprentice system isn't really used anymore?

LL For young people, there are too many jobs to choose from. Many young people are unwilling to engage in high-intensity work such as construction. In particular, the mobility of people in the construction industry is too great, so masters (shifu) are no longer willing to spend too much time and energy to teach apprentices (tudi).





Untapped potential in a London canal.

Deserted Highways

Sorana Mazilu in conversation with Gerry Heward

Scope of Work

Obstacles in London

“Good” client, “bad ” client

“The construction industry would prefer to use lorries because that’s what they’re comfortable with. Moving them away from lorries always requires some type of heart and mind activity.”



Spreading over 190 kilometres in London, the waterways always had a massive impact on the development of the city from medieval times to the present. Waterways powered London's growth from settlement through industrialisation, but post-industrial development often turned away from the water marking the demise of the golden age of the canals.

Today, waterways are once again at the centre of London's development, flowing through most of the city's largest Opportunity Areas.¹

The rejuvenation of the canals represents a substantial chapter in the "London Environmental Strategy 2019"² The plans to reintegrate the canals in the commercial transport network is sure to impact the building process as well as the transport of construction materials in and out of London.

It is not only materials for construction but also the waste created by these sites that must be transported. Many London developments are taking place on brownfield sites which means that significant levels of waste are created as a by-product and must be moved to landfill. This further increases the pressure on the road network, the most dominant method for moving goods across London.

This is a moment of redesigning the material flow, rethinking the management of a building site and introducing ourselves to the waterways operators. Boats and barges represent a possibility for extending the site, increasing material storage and creating a gateway for reintegrating reclaimed materials while minimising environmental impact.

The "Freight and servicing action plan 2019"³ provides a loose guideline of how this new interaction is supposed to happen, with many variables still unknown. In order to get acquainted with this new actor in the material flow I propose we dip our toes in the works of a seafarer. The following pages represent an introductory interview about water transport with a professional freight mover which sets the lexicon of working on the canals.

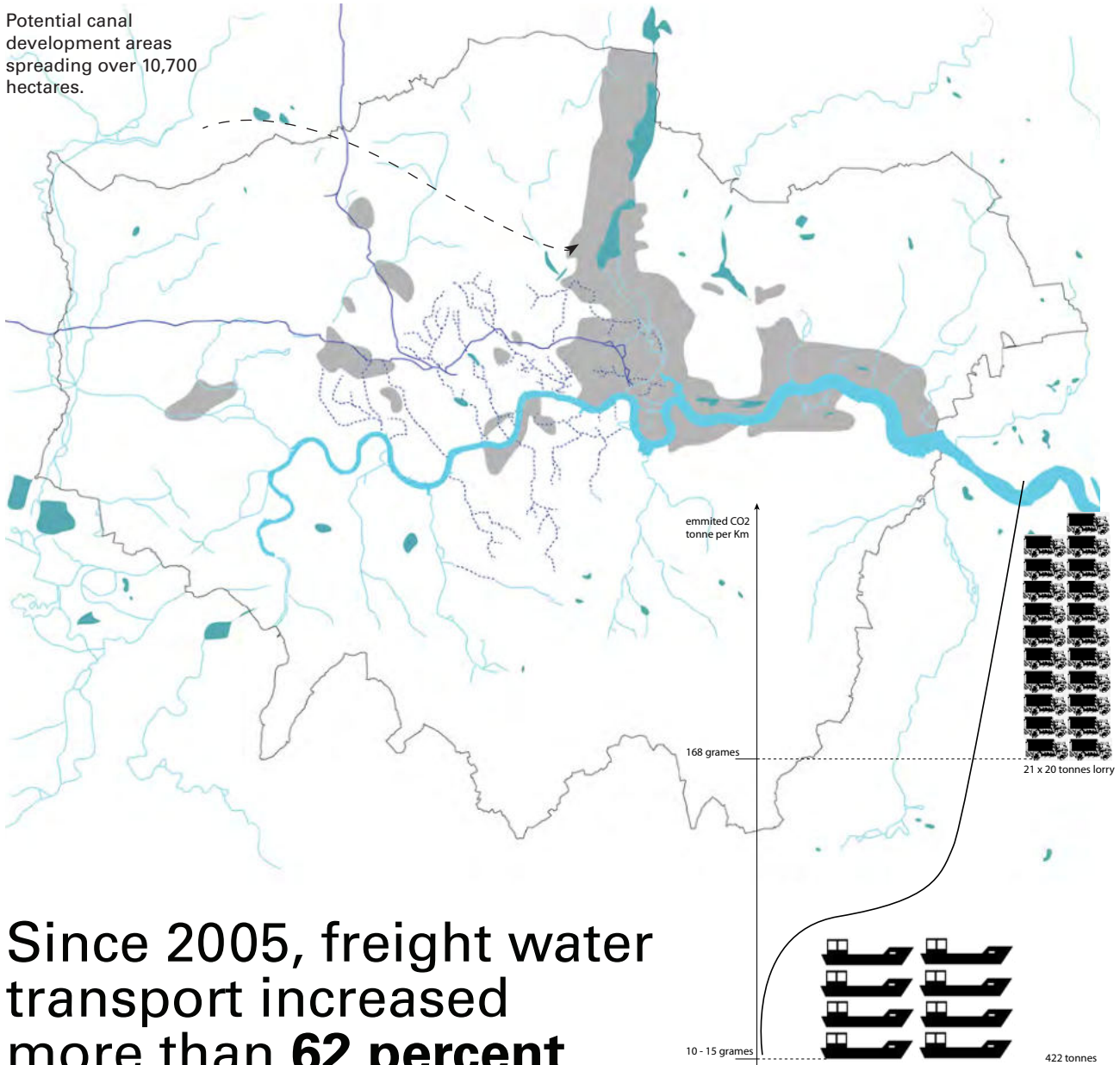
¹ Future of London, "Making the most of London's waterways", p 4.

² Mayor of London, *London Environmental Strategy* (Greater London Authority, 2019, p. 86).

³ Mayor of London in collaboration with Transport for London, 'Freight and servicing action plan', 2019, p. 89.

**Interviews conducted over three conversations
via e-mail, phone and Zoom
3 February, 2021**

Potential canal development areas spreading over 10,700 hectares.



Since 2005, freight water transport increased more than **62 percent**. This helps keep more than **265,000 lorries** off the roads each year.⁴

The above graph illustrates the emitted CO₂ per tonne per km for road and waterways freight transport. The graph highlights the efficiency of using boats in comparison to lorries for a recorded volume of transported waste. X axis is the emitted CO₂ per Km and the Y axis shows the weight to be moved.

Scope of work

Sorana Mazilu **My research stems from the 2020 Circular Economy Statement in which freight transport is mentioned but I believe its real potential is overlooked. Even though it might be an unusual sight for people to see, it presents a great opportunity to change the way a site is managed and built. I understand you have been in this industry for a long time and are also involved in multiple projects done by CLIG.**

To begin I wanted to ask what is your current position at Wood Hall & Heward?

Gerry Heward I was a director but I'm now in the process of retiring, so I'm acting as a consultant during a handover phase to new personnel. I first started working on the inland waterways in 1979 and the company that I worked for at that time transported lime juice for Roses Lime Juice from Brentford to Hemel Hempstead.

SM **What is the scope of your work?**

GH The bulk of what we do is infrastructure and construction projects. Construction projects come along every now and again but the infrastructure projects fortunately have to happen all the time. That's probably why we have such a strange array of crafts.

SM **How do you get involved in the construction projects? Do you get approached by the architects or the site manager?**

GH It is not often that we are involved early enough to deal with the architects. Having said that we are working on a project in Paddington Basin where we are in discussion with the architects.

We are often introduced to canalside construction projects through Canal & River Trust (CRT), the Navigation Authority as they are a statutory consultee for all waterside development projects on their waterways. We are sometimes contacted by the developer, usually because the planning process requires planning applications to consider alternative modes of transport such as rail and water.

The more usual route is via the construction company that wins the bid to do the work. We are also contacted by site managers but that tends to be later on in the process, for example if the local Council puts a limit on the number of vehicle movements per day to a site located on residential streets. In this instance the site

Opportunity Areas are brownfield land with significant capacity for development, shown to the left in grey (n.b. rivers and canals have been widened for visibility and are not to scale).



Water and dock construction site, cranes loading dumb barges with waste materials.

Dumb barge customized with roll-on roll-off equipment, crane and generator.

The Thames is the busiest inland waterway in the United Kingdom, carrying 60 percent of all goods lifted on the UK's inland waterway network. The materials carried on the canals are usually sand, stone (gravel, slabs aggregates) waste or specifically engineered pieces.

manager was looking to see if they could increase the delivery of materials to site by using a combination of road and water.

Obstacles in London

- SM** **It seems that you're brought in when a logistic problem is encountered while constructing and needs fixing rather than being a part of the strategy from the beginning.**
- GH** Yes, the construction industry would prefer to use lorries because that's what they're comfortable with and that's what they know. Moving them away from lorries always requires some type of heart and mind activity, we have to encourage them and say that "it does work; we've done this for many years."

People like to come and see the boats and we have to prove that steel floats. I understand it, this country is so road-oriented it makes all the packaging and the handling designed to work with a lorry. So it assumes that the material will come four feet off the ground and probably will be handled with a forklift truck or a pallet lift. Where as of course on standard barge transport those elements don't work so well. But the nice thing about the construction sites is the use of tower cranes. For tower cranes unloading from a barge or unloading from a lorry actually makes no difference at all.

SM **What are some obstacles you identified which need to be addressed?**

- GH** There is limited amount of land use and there are four main freight operators: road, rail, water and air. If you're struggling with road space and you're struggling with congestion and pollution it would seem sensible to use your other modes as much as possible. Land use comes down to the planners. We've failed to convince the planners of the importance of keeping access to the canal and to sell the canal as a viable transport use for them to take it seriously enough, I don't quite know why that is.

It would have been better trying to cultivate the people in transport from the local authorities because they deal with the issue of road traffic, accidents and pollution. They would have had more influence in their own planning department and make sure that access to the river and canal is retained. But we've never really had success with the planners and the planning process failed us. It never required planners to stipulate that they must keep access to the canal when granting planning permissions.



Image 4

Traditional narrowboat: 2m wide, 22m long; up to 25t cargo; up to 80 years old; vessel can tow unpowered 'butty' boat with a similar cargo capacity
Wide locks will fit both motor boat and butty with a total cargo capacity of 50-60t.



Image 8

Pontoons, walkways & walk flats: can be configured according to site limitations; used mostly for maintenance work, they can be customized with scissor lift, hydraulic jack, Hiab etc.



Image 5

Motorised Modern Barge: Built to dimensions of waterway ~4m wide, 22m long; up to 100t cargo. For bulk cargo like gravel, a single vessel could carry as much as three lorries with much lower CO₂ emissions.



Image 9

Crane boats: specialised barges fitted with hydraulic crane. Varying in size, these barges are equipped to lift loads of any kind, from aggregate to lock gates, essential for sites where access is restricted.



Image 6

Hopper / Dumb Barge: 4m wide, 22m long, up to 100t cargo. Can be pushed from either end, does not need to be turned. Multiple hoppers serviced by one tug, allowing continuous loading on site. Low hire cost of hopper (floating skip). Potential to fit hoppers with hiab lifting gear.



Image 10

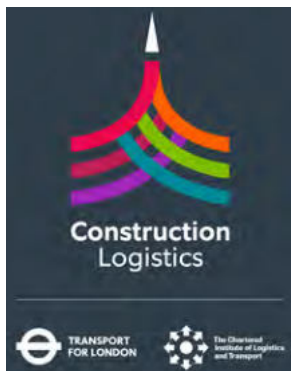
Welfare units: standard welfare unit fixed on pontoon and moved into place, providing toilet, kitchen and dry room facilities for a worksite.



Image 7

Pusher Tug: Designed to push Hopper & Dumb barges; pushing the unpowered barge is more efficient than pulling. Nimble vessels can work with multiple unpowered barges and hoppers, able to be craned into/out of the water from a hiab if required.

Images 4–7: CLIG AtoH Ltd., Construction Logistics Improvement Group, Meeting 9.
Images 8–10: Wood, Hall & Heward Ltd. (whhbarges.co.uk/services)



CLIG: Construction Logistic Improvement Group. CLIG is a collaborative project which offers training and consultancy with the aim of creating a safer and more environmentally conscious method of managing construction and material flow. Their main focus is to the adoption of CLPs (Construction Logistics Programmes) which will ultimately:

– **reduce the volume and impact of construction road freight**

– consolidate and control material and waste movement

– see deliveries retimed to less congested times of day

– **shift road freight to rail and water**

SM Do you think that if you were included in the earlier stages of a project and are in contact with the architect, it would increase the use of the canals ?

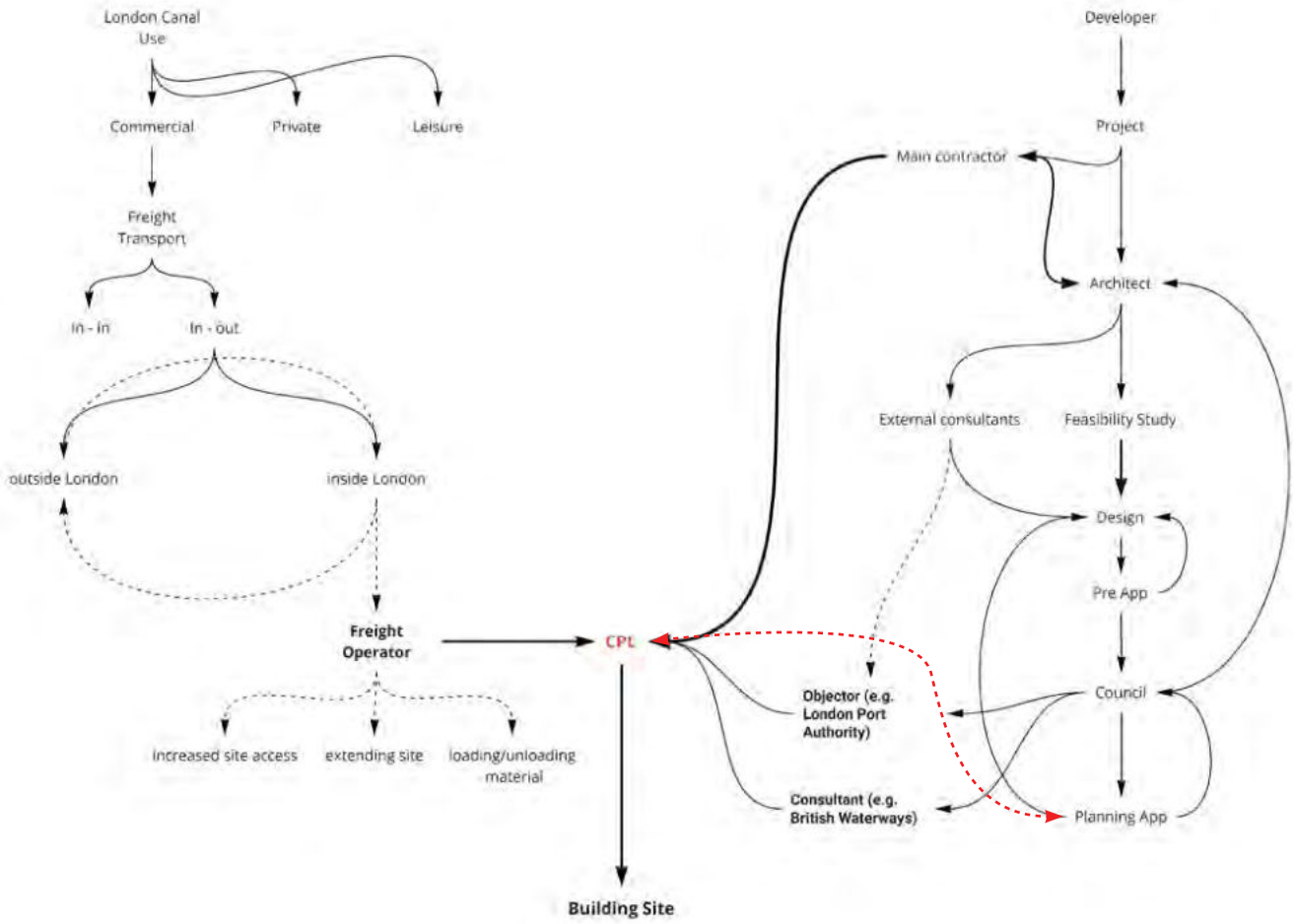
GH Yes, that's one of my interests with the CLIG: essentially they were trying to create an industry forum but the side affect of that was that people would come up and say "we have a job like this...is it possible to do that with a barge?" So we were getting included in the discussion quite early on, that was certainly very useful. Once you seeded the idea and they have confidence that it's an okay thing to do then you definitely pick up more work. All those jobs are part of our marketing, in a way. It's always good to be working in London because you're showing somebody else that you can be doing this with a barge rather than doing it by road.

SM Do you believe the infrastructure is prepared for an increase in commercial canal use?

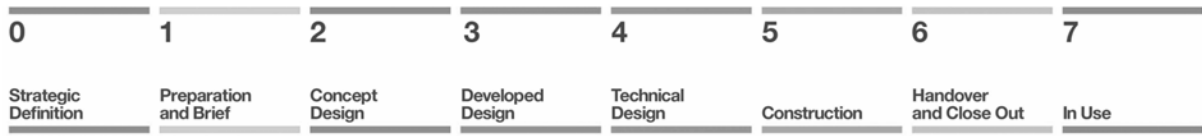
GH There has been little commercial barge traffic in London for a long time. So the canal would need dredging to increase draught which increases the tonnage we can carry. Also the locks need more maintenance to improve water control on the navigation. Leaky locks cause a problem with low water levels. The other problem we encounter is a lack of wharves or access points on the canal where we can load/unload barges. Many of the original wharves have been lost as the old industrial buildings have been replaced with new residential and office developments. We have lost the opportunity to create new wharves when these new developments were built as I think it should have been a condition of planning that access to the water was retained.

SM The issue of available mooring seems extensive. Do you refuse jobs based on this or do clients have to provide it?

GH We can only operate on the infrastructure that we've been given. And I often use an example it's like having a motorway with no motorway junctions. If you can get on, it's great but if you can't get on it or of it, it starts to be of limited use. That's sort of the frustration that I have we can re-watch anywhere but then we can't load and unload. The most important discussion we have with the customer is where we can load. The boating part isn't a problem, getting on the canal isn't a problem, having the right boat isn't a problem but having where to load and unload is always the issue.



RIBA
Plan of Work
2020



WHH delivered 660 tonnes of aggregate in one day: 33 x 20 tonne lorry loads i.e. 66 movements from the local roads

Moving materials

- SM I understand that freight transports in London require a special application – what is the process for that? Do you apply or is that something that the client must do?**
- GH** That tends to depend on the project. WHH Ltd are work boat/freight operators and our work boats are licensed as such. So we can operate on the canal so long as there is a recognised wharf to load from and a suitable destination.
- SM Navigating London canals seems quite tricky – they’re very narrow and the canals have a lot of locks. Does this affect your transport?**
- GH** The canals were built before the idea of a standard gauge came in (standard gauge arrived with the railways) so they all tend to be different sizes. What tends to be referred to as broad canals in the UK are based on a barge size of 70’ by 14’ which was in fact to allow 2 narrow boats to work through a lock together. So the limiting factor on a canal is the lock size. For us locks are not a problem as such as we have to be able to go up and down the hills but they do slow our journey times. Also, some of the locks have foot bridges running above them which are quite low. Air draft is an issue for us. We can ballast, we pump water into the barge if we need to go down a bit but there is a limit to that.
- SM For the material transport does the form of the material matter? (granular, stackable, pallets etc.)**
- GH** Most of the waste we move is loose/bulk or in 1 tonne bags. We have moved construction materials in stackable form such as on pallets or in frames for items like cladding panels, windows etc. We did a trial a few years ago for Hackney Council transporting waste in roll-on-off containers and we have also transported waste in standard lorry skips.
- SM Have you encountered projects where you stored reclaimed construction material on the water or if you had any project that required bringing in reclaimed materials? What is the equipment did you use?**
- GH** For material transport we would use a dumb barge, a barge that doesn’t have any propulsion, a general purpose barge, so it’s a



Development in King's Place, London N1: At a congested urban development site, barges delivered material to be stored on-site without taking up room. (CLIG AtoH Ltd. Construction Logistics Improvement Group, Meeting 9)



relatively a large volume space that is used for carrying palletised material, bagged materials, those sort of things. Reaching a site where there would be a crane that can lift the materials out. As an example we had a project in Kings Place where we had about six barges and we took in quite a range of materials from: staircases, double glazed units, very large glass panels, a lot of steel beams, brick and blocks which were palletised. The only waste we took away was plasterboards and they had a machine like a wood chipper and they chipped all the plasterboard waste.

We do have some flat tops, one or two but then we have some bigger barges with bigger cranes which we use for heavy lifting.

SM Working with construction materials how do you plan a route?

GH For a lot of the construction site it's very rare that we're pushing maximum tonnage on the barges because of the nature of the materials. We can get 60-70 tonnes in a barge but it's very rare to reach the maximum. Therefore, your draught is more of an issue and your journey time will undoubtedly be slower.

Usually with the construction sites is usually more a bridge height issue because the contractors are used to lorries which can be loaded with 8-9 feet materials. But 10 feet for me is potentially starting to be a problem. The other problems with construction materials is the fact that sometimes we can't see around them because they stand up so high in the barge. We don't tow our barges we push them. That means that the skipper is in the back so he's always trying to look past the load, sometimes that's a bigger issue than the actual load.

I was also involved with the setting up of the CLIG route engine and the testing of it and to be fair to them they have done quite a good job considering the fact that it's quite tricky. I have to say I don't use it because I've done it for 20-30 years. So I sort of know where the tight places are and know where the pinch point is and as long as you know that you know that you can get everywhere else.

SM So in the material flow do you usually have to pick up material from centres in London and move it to site or bring it in from outside?



London E15: Development with opening to the Bow Back River canals, with potential to use the waterways for material transport and waste disposal.

GH If we refer back to the Kings Place example, there was a building there called the Granary. McAlpine took over the site and used it as its offices and all the materials were delivered there. Basically, it was a consolidation centre and then we delivered a barge down underneath their crane, they would load it and we would run the barge up to Kings Place and it would stay there. It would become a store and we would unload it using their tower cranes. Other than that, there's a builders merchants next to Powerdays in Willesden and if we're doing something like tow-path work and need aggregates we often go there. They can actually load right into our high up barges we can unload material right into the tow-path.

"Good" client, "bad" client

SM **Seeing for how long you are in this industry I imagine you must have "good" clients but also newer ones who perhaps don't know what they want. How do they approach you? Do they just say "I have 20 tonnes of waste can you come move it" or how do they approach you?**

GH With the infrastructure work, as we work a lot with a client, probably after 18 months of continuously working together, they start to know exactly what they want and what works for them. With the construction companies it's a bit different because I don't think we've worked with one company more than once. It's a learning curve and one of the things they're not very good at is giving us the quantities. They often don't know the quantities themselves, they don't know the schedule or the rates. I probably know better than they do. I suppose it's site logistics and if you go to the right people they could probably tell you from the top of their head because it's what they do on a day to day basis. But the people who seem to contact us don't seem to have very much knowledge of the actual site logistics. So I would say "Do you actually have any idea of the number of tonnes you have to get out? Or what do you think it might be per day?" They rarely know.

And it's not a constant flow, building sites are alive, a living breathing thing. In the early stages there would be a lot of material, later on there won't be any excavated but there would be construction waste, early on there would be steel, blocks and bricks going in and later on there would be first fix and second fix type materials. And you have to come to some sort of conclusion because that determines how many barges to send. Is it one barge every three days or three barges per day? That shapes how we price a job and how much kit we need at the beginning of a project.





Salvaged stone, Jinan.

Salvaging stones

Iris Meng in conversation with Zhang Wei

The context

Demolishing & Salvaging

Reuse & Aesthetic

“Ordinary people certainly will not buy these materials. These are for relatively wealthy people. Moreover, these were originally from the demolished old houses of ordinary people, so of course, they would not pay for these stones.”

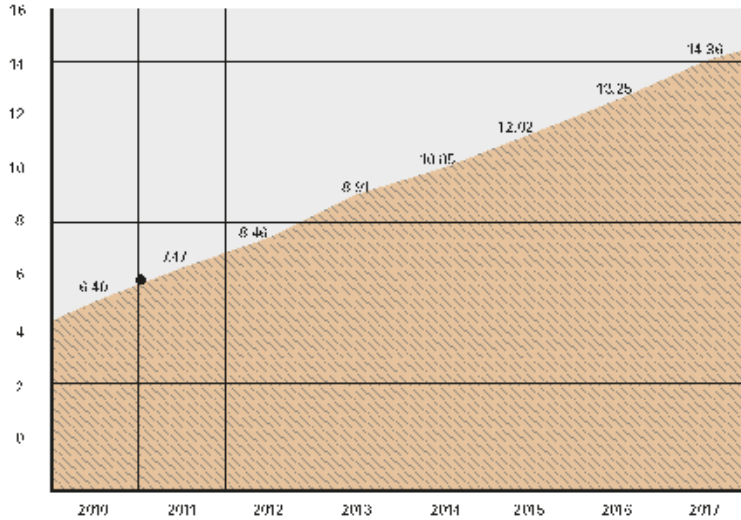


Zhang Wei and I met in a village that was undergoing demolition in Jinan city, provincial capital city of Shandong Province, and he was hauling a stone slab from villagers' yards onto his small truck by hand. I had a brief conversation with him, and I followed him, documenting how he and his father bought old stones from villagers whose houses and villages were undergoing demolition and then drove about two hours to resell them to a reclamation yard in another city in Shandong Province.

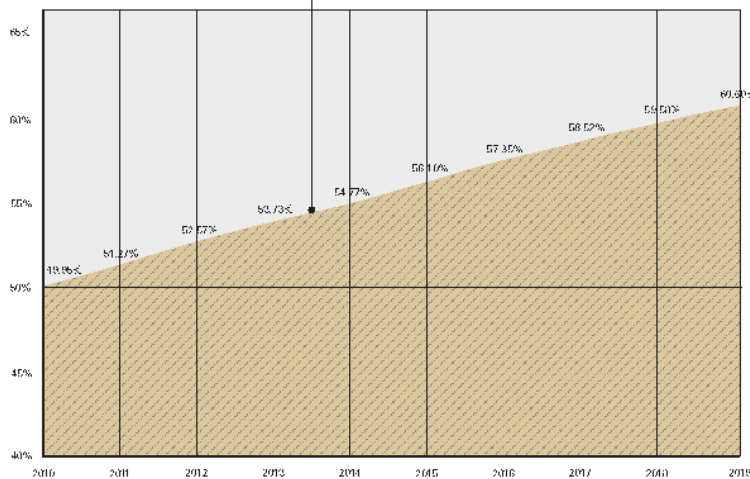
These villages and houses are around 100 years old. The approximate proportion of materials being salvaged is 20 percent, materials being crushed ("recycled") for aggregate consist of 25 percent, materials being crushed for landfill and backfill is made up of 55 percent. Zhang Wei said that this was his basic daily routine after graduating from high school. He would get up at 4 a.m. and drive to the village where the demolition was taking place, and then he would start doing demolition, salvaging, and lifting and hauling work until the afternoon. Then he has to deliver the materials to the reclamation yard before nightfall. Then the next day, start the same routine. Zhang Wei also told me that there are many stone traders like him in Shandong province. Due to the geographical conditions of Shandong Province, there are many stone mining and processing facilities, so the rural houses here were traditionally built of stone. Here, the stone reclamation industry is one of the biggest in the north of China. Based in Shandong, it sends such reclaimed materials to all parts of China.

After that, I had this interview with Zhang Wei by phone, through which I felt that Zhang Wei was worried and holding a pessimistic perspective about their industry. First, he says, the industry is closely linked to national policy. For example, they can reclaim so many materials in recent years because of China's five-year plan for 2016–2020. In this plan, the promotion of new urbanization is planned in detail, which means that many villages will be demolished and merged into another new town. The Chinese government's efforts to promote a "comprehensive poverty eliminate policy" from 2017 to 2020. More poor villages that do not meet the standards will be demolished. These policies are good news for Zhang Wei and his colleague. However, at the same time, if these policies stop, it would mean their reclamation industry can no longer continue because "there are no stone houses left from which to salvage this material." He is worried that these materials, especially stones, are tough to imitate and can only be achieved by natural weathering. However, these stones are not renewable, and there is a certain amount of them, so they eventually run out. So, he says, "I do not see a very bright future in this industry."

Building demolition area (Hundred million m²)



Urbanization rate in China (%)



The outline of the 13th Five-Year Plan for National Economic and Social Development of the People's Republic of China (2016–2020). The Plan is the guide for the behaviour of market entities and an important basis for the government to perform its duties.

“Encouraging about 100 million rural migrants and other permanent residents to settle down in urban areas. We will move faster to renovate rundown areas and urban villages where about 100 million people live.”

The context

Iris Ming Can you briefly tell me what do you do?

Zhang Wei I salvage old construction materials and antiques from demolition sites, and then I sell these reclaimed materials to salvage yards.

IM How long have you and your family been in this business?

ZW Around five, six years.

IM Are you one of the first to start this business?

ZW This kind of business has been done before. Because of the country's Five-year plan, the number of places to be demolished increased, and we started to do this business. I have the impression that this kind of business has existed since more than ten years ago, because the living conditions have become better, and people start to do this kind of business. From the collection of bricks and stones, and then in villas, as decoration.

IM Do you mean the "promoting of the circular economy" in the Five-year plan?

ZW Actually, it is not. We know barely anything about the circular economy. What I mean here is more to do with rural demolition. The central government is carrying out the new urbanization policy, tearing down numerous villages, and moving those people into a new town.

IM Are there any more particular policies that could affect the business?

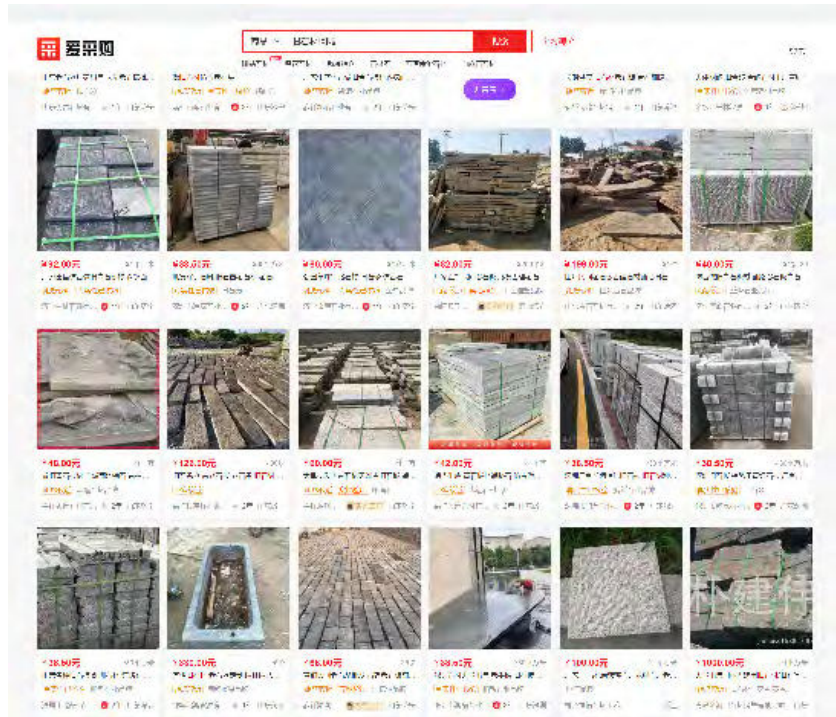
ZW Yes. I think there is one more. Have you heard about the **Poverty-Alleviation policy**? The country sets a standard, and then those villages that do not meet that standard have to be demolished and then the people have to move to one of those housing complexes. More villages have been relocated in recent years, and more people have been reclaiming these materials. Before the demolition policy, you could not receive these materials.

IM So they reclaimed bricks and stones more than a decade ago? Now those villages in Shandong have been demolished a lot? Is there less to be reclaimed?

Poverty - Alleviation has been implemented since November 2015. The goal is to ensure that the rural poor have food and clothing, and the rural population's compulsory education, basic medical care, and housing safety are guaranteed. And in many cases this necessitates total demolition of villages with poor housing conditions. Simultaneously, farmers' per capita disposable income in poor areas will increase faster than the national average. Under the plan, all poor towns and villages must be lifted out of poverty by 2020.



Shandong Province is located in East China, most of the terrain is mountainous and hilly. The area has plentiful deposits of sandstones, marble and granite, which were traditionally used in construction of rural houses.



E-commerce platform Aicaiyou, where resellers sell their products.



Resellers conducting a live webcast via phone to sell reclaimed stone.

In recent years, more and more e-commerce platforms have appeared. For example, Taobao, WeChat, and even live streaming. These platforms have become essential channels for vendors to sell reclaimed stones.

ZW Yes, a lot of the villages have been torn down. We do not usually go to those deep mountains to reclaim the materials because it is too expensive to transport them, and it is too troublesome. We always choose to go to those villages close to the road which have better accessibility. I do not know about those deep mountain villages now. The villagers might be paying for the transportation fees.

IM **Do you have any idea why there are so many reclamation yards in Jining? Feels like there are at least three down the street?**

ZW I think the main reason they are doing it because they get profit from it. When he sees other people making money, he learns to do the same. They are also doing e-commerce business, selling materials through the internet. Many reclamation yards are doing this because it is profitable.

IM **I thought it might be because there was a lot of demolition going on around that area and that is why build reclamation yards there. However, there should be many stones in Shandong, right?**

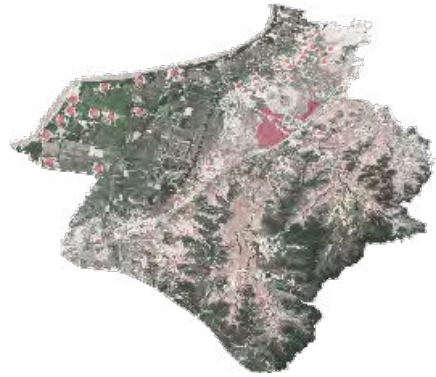
ZW Yes, it has something to do with demolition. An abundant amount of stone was excavated and processed here in Shandong, because we have many mountains, for example, the Qing Mountain and Liang Mountain. So the stone was the primary material for building houses.

Demolishing & Salvaging

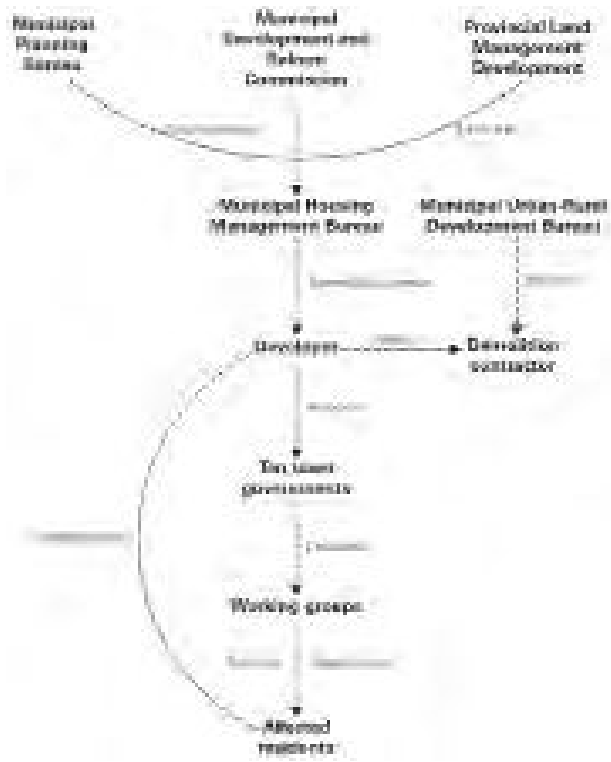
IM **Do you generally drive to the village that is being demolished directly, do the salvaging work, or just drive around and look for a demolishing village?**

ZW We usually know that this place has been demolished in advance and then go there. In general, it is not just one village, but several villages being demolished around that area, so sometimes we could salvage in the same area for a long time. Let us say for a month.

IM **So generally, you get the information of demolition places from the news?**



Xiaoli Town, 39 villages are undergoing demolition due to the Rural construction planning of Jinan city, 2018–2035.



Stakeholders involved in demolition process.



Manual demolition, Zhangying Village, June 2020.

ZW Sort of, you know, watching the news or something. And those people who are also doing this kind of business will tell you because the quantity of these materials is massive, it is impossible to get this done by just one person. The stone, for just one house, they could barely transport in three small trucks. Can you imagine how long does it take them to finish hundreds of houses in a village? Besides, some areas have more than one village undergoing demolition. So, in general, we would inform each other.

IM **Do you contact those demolition contractors who are doing demolition? Or cooperate with them?.**

ZW You don't need to contact the contractors because they are individual businesses. It would be troublesome to work with them. You can contact the owner of the house directly.

IM **Do you do demolition work sometimes? Or you don't do it at all?**

ZW Yes, we do that. We have to get it done before the machine comes. Otherwise, they would destroy many materials.

IM **What are the reclaimed stones used for once people buy them?**

ZW Generally they are now used for decoration. Many people like the Chinese style now. Those with a historical significance are quite popular, for example a feed cattle trough is now used to raise fish is pretty beautiful. Mostly those are good for collection, but it is rare. On the other hand, those that have no use-value or no features are generally not reclaimed.

IM **Based on your experience, what percentage of materials can be reclaimed in a rural house?**

ZW It depends. As long as it's stone, and many of the houses in the villages are mostly built by stone, I feel like 90 percent or even 100 percent can be reclaimed. It depends on how you will use these stones, like that kind of irregular-shaped stone, they can be used as decoration, for those stones with good look, can be directly used for paving, or decoration.

The machine here means the excavators that owned by the demolition contractors. The manual salvaging have to stop once these excavators coming to the demolition sites.

However, the cost for reclamation is relatively high. Because we are doing manual demolition and it is prolonged, so have to hire more people, and we have to pay for the daily labour cost and the petrol fee, and transportation cost should also be taken into account.



A rural house in Fangyu village, approximately built in 1890.
Its stone awaiting salvage.



Reinforced concrete and brick houses
are considered unreclaimable, so
they are demolished and destroyed
completely.

When I was in Jining city, Shandong Province, I visited and interviewed Lu Xiang, the owner of Xiangyuan Reclamation Centre, which reclaiming stones and woods from the stone resellers like Zhang Wei.

Lu Xiang told me that they could sell 80 percent of the stone and wood they reclaimed because people are more interested in ancient Chinese aesthetics these days. And a growing number of government heritage restoration and preservation projects require such historical materials. His concern is that these materials are becoming less and less.

Through our conversation, I realized that the market heavily influences stone resellers like Zhang Wei as well as the reclamation center like Xiangyuan. To be precise, customers' aesthetics determine these stone resellers' reclamation standard.

*The average salary of a demolition worker in Shandong province is 96CNY/Day (10.83GBP/Day)

IM But I saw the excavators were tearing down the houses, could there still be so many materials to be preserved perfectly?

ZW It really depends on the type of houses. A lot of new houses are not reclaimable. They are just regular houses. Comparing with an old house built almost entirely out of stone, those built out of brick and concrete are not reclaimable. Now that kind of stone you can not extract from the mountains anymore due to environmental protection. So you can only reclaim the old stones instead of extracting new stone materials.

Reuse & Aesthetic

IM Do you know what happens to those non-reclaimable materials?

ZW Basically, they would be rubble and then used for backfill.

IM So what is the most popular reclaimed material? Is it the stone?

ZW It's all the same, just stone and black brick, and some wood.

IM Who are the main customers for these reclaimed materials?

ZW It's usually for villas, decorations, and antique buildings. Either for decoration or luxury architecture.

IM Can you give some examples of how those customers use these reclaimed materials?

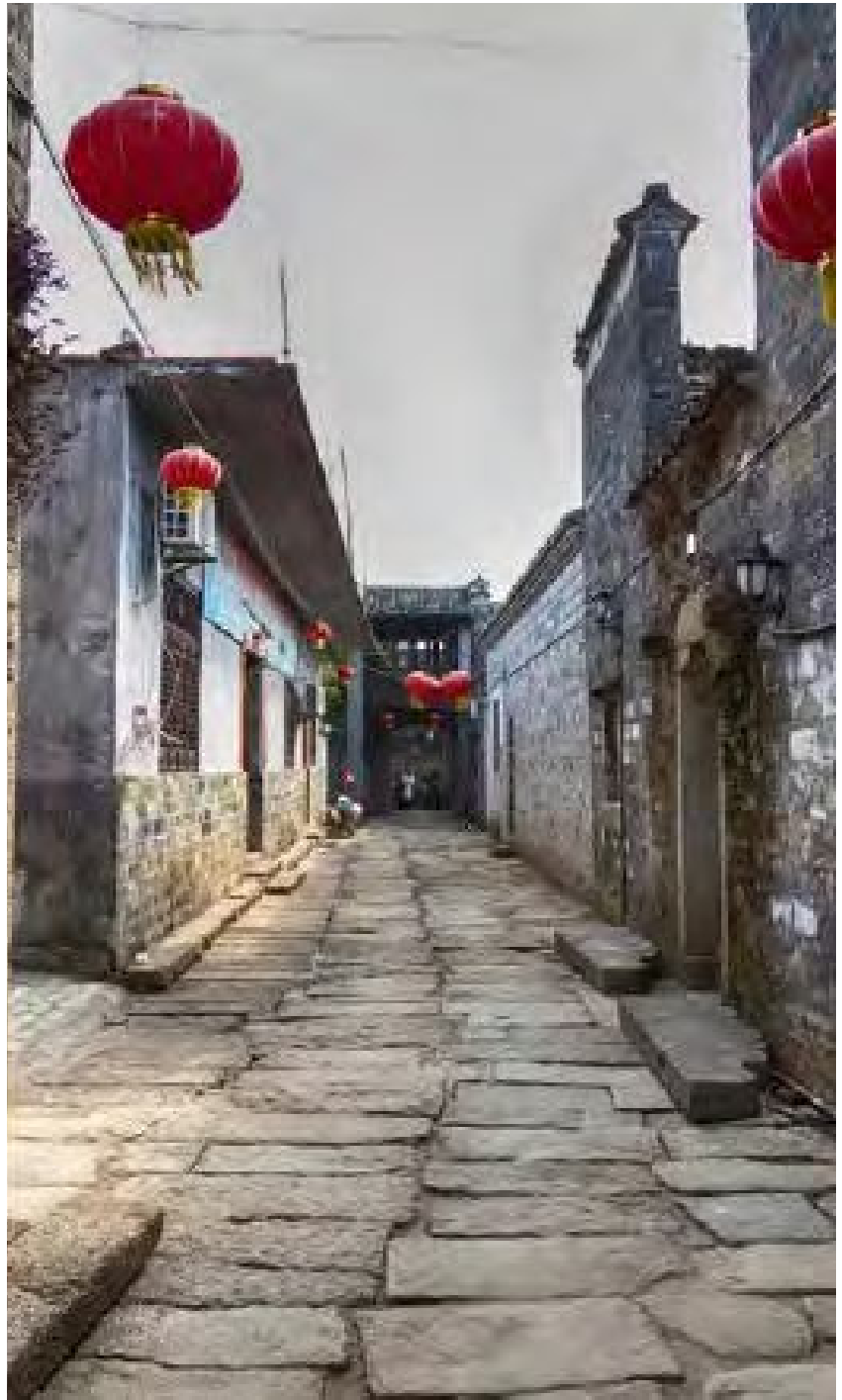
ZW Sure, I can show you some pictures. I know there was one government project called "The renovation project of Furong Street" in Jinan. A historical pedestrian street with shops. They brought numerous reclaimed paving slabs from us to renovate the paving of the street. This one I think is quite interesting. This customer uses this paving slab as a tea tray, which is uncommon.

IM Will ordinary people buy these?

ZW No, ordinary people certainly will not buy these materials. These are for relatively wealthy people. Moreover, these were originally from the demolished old houses of ordinary people, so of course they would not pay for these stones.

IM So what do you think about the future of the materials reclamation industry?

Furong street, Jinan, features paving slabs reclaimed by Zhang Wei. This is a government project. Furong Street is a historic characteristic old street and snack street in the center of the old town of Jinan. It is an important tourist attraction of Jinan. In addition, many tourists from other cities will visit here. This project aims to restore and enhance the old historical features of Furong Street, including the laying of the old bluestone pavement to restore the heritage as much as possible. According to records, the old streets and alleys in the history of Jinan are all paved with old slabs of bluestone. Two years in advance, the government staff went to many cities in the province and collected thousands of old slabs of bluestone in many stone reclamation centers.



ZW I feel that it is not so good, because you can only reclaim the things before and materials are non-renewable. There aren't many stone houses left now, so I think fewer and fewer materials can be reclaimed. And this kind of thing can only be reclaimed and cannot be antiqued because the natural process of weathering a stone takes time. So, there are fewer and fewer of them. I don't think there is any prospect of this industry either. It is not an unusual thing, just something with building materials.

IM **Will you continue to work in this industry then?**

ZW No, I think I'm quitting next year, and my father would continue.





PERICOLO
FUOCO





Former Mira Lanza soap factory, Rome.

Roman Patrimonio

Alex Mitea in conversation with a Mira Lanza Resident



Interview conducted with one of the illegal squatters who live in the abandoned Mira Lanza factory. The community inhabited the structure in 2002, and they have lived there ever since. Due to the lack of housing and high rent, they were forced to leave their homes and form a new family.



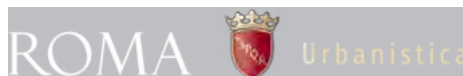
ROMA CAPITALE

Heritage and Housing Policies Department, Roma Capitale: responsible for the inventory, protection, use and enhancement of the real estate assets of Roma Capital. Furthermore, the Department is responsible for the contractual management of the real estate assets under concession and lease used by individuals, associations and organizations for social, cultural and entrepreneurial purposes.



SANT'EGIDIO

Sant'Egidio is a Christian community born in 1968, right after the Second Vatican Council. The Community works closely with people who are in difficult situations. They were trying to gain access to the public buildings through Italy to house people who are homeless or evicted from their homes. The Commune rejected Their proposals, and they are in a desperate situation with rapidly increasing numbers.



Planning and Urban Implementation Department: responsible for the general planning of the territory, and regulates its transformations and manages the implementation tools. Among the priority objectives of the Department are the recovery and regeneration of existing fabrics and buildings around Rome.

Roma Capitale has an ample patrimony of buildings, and most of these buildings are abandoned and left neglected, reaching an advanced state of decay. Built before the 1930s more than 150 buildings, they are seismically outdated and have a great potential of being re-purposed with a minimum of intervention and interest. The Heritage and Housing Policies Department are responsible for all those buildings, but they are not aware of their potential because of a failing system.

The Mira Lanza factory, formerly a soap factory but abandoned since 1952, has an illegal squatting community living there for nearly 20 years. An in-depth conversation with one of the inhabitants about their situation, how they build their homes, and where they procure their materials led to the question why the authorities are not taking advantage of these buildings.

Conducting a series of calls with the officials from the Heritage and Housing Policies Department leads to the conclusion that there is no legal body overlooking the situation. Moreover, they confidently suggested that this matter is not under their jurisdiction and pointed towards Planning and Urban Implementation Department, which provided a similar reply.

There is a high potential in formalizing the system for the regeneration and re-adaptation of all the abandoned buildings around Rome. But it is a system that needs immediate reform responding to the urgency of the abandonment of public buildings.

Interview conducted in Rome
21 September, 2020



At the former Mira Lanza factory, doors and windows used as walls to allow more light into the dwellings.



Euro-pallets used as weight to hold the tarp on top of the structure, placed directly above the insulation foam.

Alex Mitea Can you tell me more about the building, if you know any of it's history or what happened to it?

Mira Lanza Resident This brick structure is really good. If it would be covered would potentially still be good 30 years from now on. A few years ago there was a fire and the entire roof burned down. I think the roof was really old and unstable, maybe more than 30-40 years old. Last time someone took care of this place was when a French artist tried to revitalize the factory and organized an exhibition of graffiti here.

AM I read about his work and his intentions to retrofit the building, to transform it into a museum.

MR With those people who have an initiative and they are not helped by anyone, you don't know. If there is no one here who can organize, and constantly take care of the building then it's not likely to work. The trash is the real problem. We have only two containers, we cannot manage with so little.

The police broke in two weeks ago. They threw us out. Almost everything stayed but they demolished some parts. We repaired some parts ourselves afterwards. We are starting now to clean up, sort of. We still need a lot of time for that.

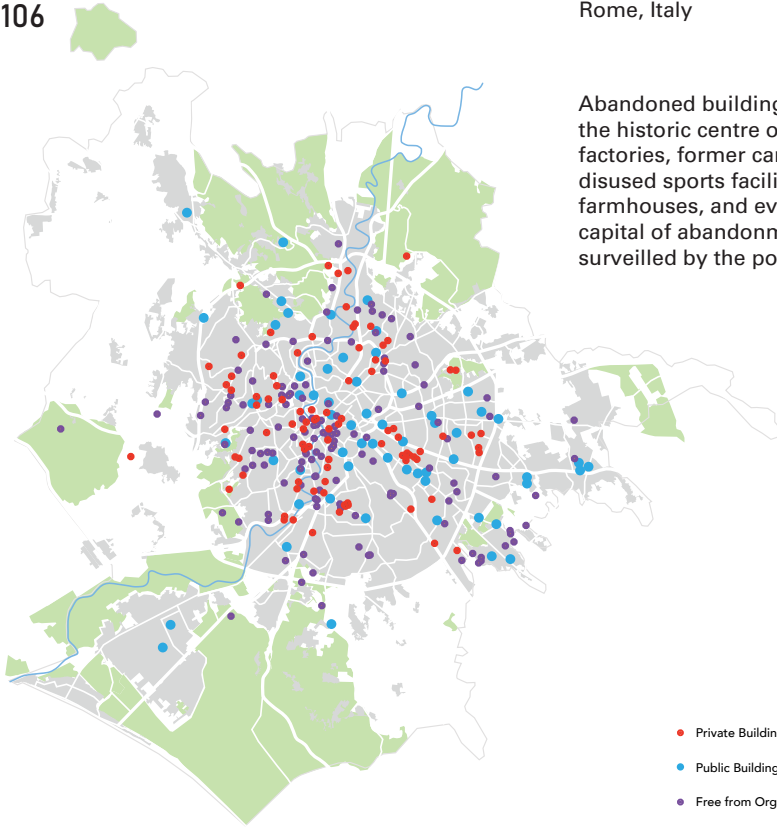
AM All the materials that you use for the construction such as doors, windows, metals sheets and wooden beams, where do you actually buy them from?

MR We don't buy them, mainly we search in the vicinity and find them. Bins, containers, or on the streets. Mattresses, beds. Slowly, slowly you gather, and you can build.

AM I understood that the Comune di Roma is the owner of the building, that they bought it 50 years ago.

MR They came and kicked us out multiple times and the authorities did not let us in. But we came back in. We stayed for two weeks camping outside in front of the building. We are here for more than 10 years. I came here in 2006. Some are here since 2002. During the time some families moved out or tried to go back home but after two, three months they came back.

AM What are the procedures or who is in charge if someone who you don't know wants to come and live with you in the Mira Lanza?



Abandoned buildings in Rome: most are situated in the historic centre or in the vicinity, including former factories, former carpentry and industrial warehouses, disused sports facilities, schools and cinemas, farmhouses, and even a church with its rectory. In the capital of abandonment, 161 forgotten buildings are surveilled by the police.

- Private Buildings
- Public Buildings
- Free from Organized Crime Buildings
- Green Spaces



Roma Capitale's administrative service building. Structure made out of brick with plaster rendered walls and wooden doors and windows and roof of U-shaped tiles .



Abandoned public building belonging to the Statal Aministrative office. Apartments used to be rented out to the office workers.



Abandoned public building formerly used for public services. Structure made out of bricks, repeating sequence of windows, similar to all the other abandoned buildings.

MR They can stay only if someone knows them. If not they cannot just come and live with us. Maybe a criminal comes or maybe a crazy person. You need to have morals. If you come with a friend, you are responsible for him if he does something stupid. We are a peaceful and tight community, you can call us a big family. Almost every time, there will be someone to organize something, for example dinners or small gatherings. If someone makes a mistake we would always flag it out. Especially when you don't know the newcomer so well, some are crazy sick, they will make one mistake like shouting or getting drunk, we leave him there to calm down on his own and after we would tell him that something like this is not tolerated here in our community, but if everything is peaceful and quiet, no one will bother you. Thank God that here, there were no fights or any trouble along the years.

AM **There are plenty of building around Rome, as I research now for university, that are abandoned, and hundreds of people live inside them and have a proper unit for themselves and their family. Why don't you use the leftover bricks for the construction of your houses?**

MR We would use them if we knew that we have legal stability here and everything will be safe. The problem is the police and the authorities who throw us out and destroy our houses several times a year.

To build a better house we would have to work a week or two; then you have to buy cement, this and that... with sand it's expensive. Like this you buy the nails and you can immediately in a few hours have the house ready. That's why we don't make them out of this brick.

You see the cement addition where the walls merge with the old floor of Mira Lanza; it's made by us to stop the water coming in from underneath when there are bad rains. All the houses have it, look at the side. All are made by us, so the water does not come inside. They have 8-10 years since they are standing and we never had problems with water coming inside.

AM **That old and you never had any problems, that means that you are a really skillful builder.**

Seismical vulnerability it's a big problem in Rome because of the age and materials that were used to build those buildings. The process followed by Roma Capitale to determine if a building is seismically stable. Worked example offered by a partner who conducts the survey in behalf of the Capital. A big reason why those buildings cannot be rehabilitated and used.



Image 1

It is considered a load-bearing masonry building consisting of solid bricks and good mortar. It is a building that develops on 2 decks, with walls that are interrupted at floor level and are well clamped together; the floor strips, mostly narrow and thin, are made of masonry without any ability to withstand horizontal stresses. The floors are made of brick-cement with a collaborating hood.

The portions of horizontal masonry above the rooms are elements capable of influencing the behavior of the walls in the presence of horizontal actions acting on the wall plane. Their main function is to provide coupling between the masonry walls in terms of strength and deformability. In the studio building, the floor strips are not very resistant, therefore they are modeled free from the vertical elements, so as to transfer only the horizontal stresses.

An effective clamping between walls along the vertical intersections guarantees a box-like behaviour of the structure and prevents detachment of entire walls or portions of them in the presence of stresses perpendicular to their plane. In the calculation model we will be able to represent the walls in such a way that their ends converge in a common node through which the stresses are transferred.

The verifications of the example building showed that the structure does not show problems in terms of out-of-plane kinematics (first mode mechanisms). On the other hand, it is not suitable for overall resistance to seismic stresses. So how can the high vulnerability of the structure be quantified? The seismic vulnerability index of the structure is defined as the ratio between the seismic action corresponding to the achievement of the capacity of the structure and the seismic demand at the ultimate limit state.

MR Come here and check out the roof, you need to give it a bit of slope, so the water can drain. When they broke in they took the entire roof down and we had to remake it. Initially when they threw us out last time we wanted to move to a different location but it was completely full.

You cannot live only on your own, you need people, friends and family around you especially when the police raids us. Then we decided to come back here.

AM **All the materials that you use for construction are reused?**

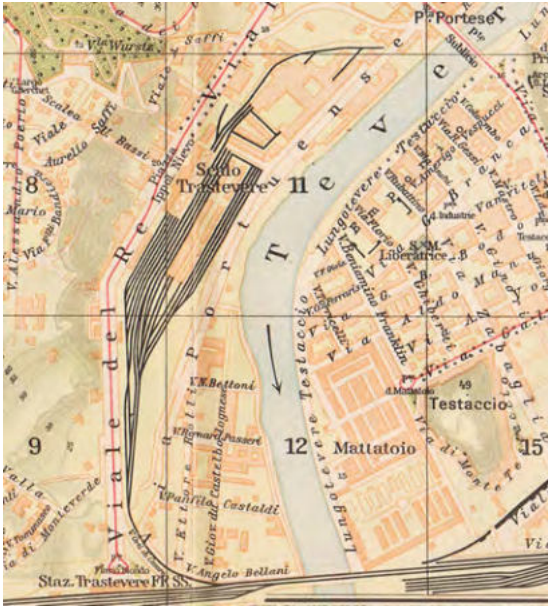
MR These doors and windows I think I have found them 7-8 years ago and they still perfectly do their job. From time to time you need to do some maintenance but nothing big.

AM **How is it in wintertime when it's really cold outside?**

MR We have stoves. We carry wood from the trash containers, and you live like a king. You can survive. If the temperature drops drastically and we have no wood we use alcohol.

MR People here in Italy throw away everything and they are not aware that a lot of materials can be reused. You can easily find a good bed thrown away. Now we find a lot of copper wire. We collect the wire and sell it to recycling plants. We do the same with car batteries. You find two batteries and easily you made 10 euros and you can survive but you need to work hard.

I forgot to mention something really important to you that the main and the most important part of the construction of our homes is the tarpaulin. You can use it for years because its a really good insulator and water will never come inside.



The Trastevere station of 1890 is an abandoned railway station located in Piazza Ippolito Nievo, in the Gianicolense district. It was built in 1890 to make up for the function of the old structure of Rome Porta. Already in the Town Plan of 1883 it was decided to make a large stop in Trastevere, in that case even inside the walls, in front of the convent of San Cosimato. The new station served both for passenger traffic and, above all, as a stopover for goods from the port of Civitavecchia.



The building on the side of the tracks housed a large, richly decorated iron canopy that covered the five passenger tracks, alongside them there were five other tracks passing through for freight trains and five trunks serving the freight sheds.

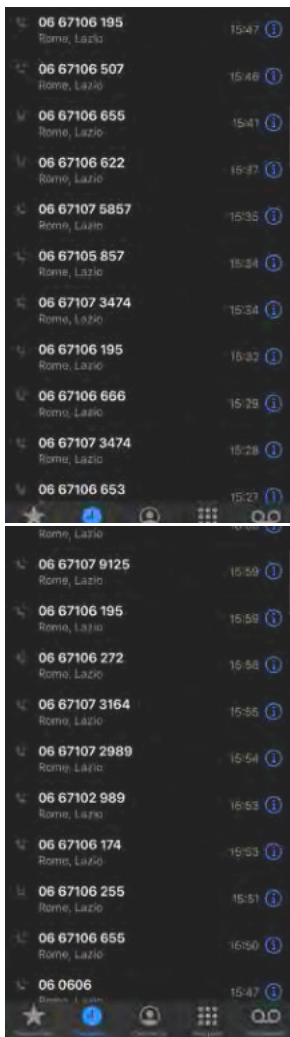


Despite the enthusiasm and hopes of the designers, passenger traffic never took off enough and the line to Civitavecchia returned to have its terminus at Termini.



In the 1990s it was completely abandoned; today it is in a miserable state of decay and awaits a worthy restoration that brings it back to its former glory.





Sant'Egidio
Charity

Brief Interview with Sant'Egidio Charity

AM Has there been any request from you to the Municipality of Rome for the reuse of abandoned buildings owned by the Municipality for the homeless?

We have appealed to the Municipality for the use in this emergency period for some hotels or disused buildings. However, the Municipality of Rome has denied it to us. There have been other appeals following the death of 8 people from the cold, in particular for the opening of swimming pools and gyms (which due to Covid have been closed for several months and which are still not open today), but also here they replied to us with a negative answer. Besides, the places for short stay accommodation, which can be 24h or 15h, decrease because very few institutions and organizations have joined the program. We tried to propose a co-housing solution, which was always discussed in the media and the government, but the concept is still too advanced here in Italy. Sorry for the short answer. We do not know why the situation of abandoned buildings is not taken advantage of.



Series of phone calls between Heritage and Housing Policies Department and Planning and Urban Implementation Department avoiding any answer regarding the problem of publicly owned abandoned buildings. Some departments directors came forward with the excuse that they were appointed in office since the beginning of the year or that "today it's their first day in this position." No one in the municipality takes responsibility for this problem.





Surplus and used materials,
Industrial Area 6, Dubai.

Material Hinterlands

Shubaib Mohamed in conversation with Mandeep Bhandhari



Dependable Steel



Steel Masters International

“It’s a chicken [walls] and egg [window] situation. What comes first?”




Dubai is a City that has rapidly developed over the last 50 years, from a population of 73,000 in 1970 to 2.9 million in 2021. Reuse with regards to building materials is quite minimal in the City. The mindset and nature of the construction industry is to always approach new materials as the City relies on a steady supply of materials for its rapid growth. However, there is still a largely undocumented reuse sector that functions highly informally. In a way, the mundane elements found on the resale yards is a reflection of Dubai's rapid development. It represents a leakage of construction materials from formalized large construction projects to an informal market that deals with salvaging from the same projects. Second hand materials in Dubai consists of surpluses from over ordering for large construction projects and materials that are dismantled as well.

The most interesting finding from the resale yards is the abundance of aluminium elements like doors and windows. Due to the City relying on modern building materials, nearly all of the buildings found in modern Dubai use aluminium for its windows, doors and cladding. The City has currently shifted its efforts to develop standardized housing within large communities in the last 10 years. Home ownership laws within the communities also became liberalized, allowing individual homeowners to make alterations to their 'standard' house. This unlocked a market for small construction projects but at the same time giving rise to the salvage of materials from these communities. Currently, Dubai functions as a global hub for trade and commerce, functioning as a logistics hub.

The following conversation represents a microscopic part of the construction industry in Dubai, highlighting the nature of the industry. Mandeep Bhandari is managing director of Steel Masters International and Dependable Steel in Dubai with over three decades of experience in the steel and aluminium industry, mainly for the construction field. He has critically positioned himself within the growth of Dubai and provides insights on the nature of developments in the City, the use of aluminium and steel and even the use of concrete for Dubai's climate. Additionally, he also provides his insights for trading steel in Dubai. The conversation highlights the potential of having a niche clientele for the reuse market relying on businesses such as Dependable Steel.

Interview conducted on Zoom
10 February, 2021



long lasting economical sheds built tough

The VillaShed

Built with a low profile to remain below perimeter wall heights to comply with local covenants, the Villas Shed is your ideal solution for the safe and secure storage of goods such as garden tools, sports equipment, BBQ's, and lawn mowers.

The strong monocoque construction, takes full advantage of the high tensile strength of the Smart-Clad roof and wall cladding from which all of our sheds are manufactured.

Large double doors with heavy duty hinges, and a two way latching rod and cam system with lockable handle provide convenience and security.

All of our sheds feature extensive dust sealing to keep your goods dust free, dry, and free from rodents, snakes, and other pests.

Sizes (mm)		
Base Material	BlueScope SMARTCOLOR™ or ZINCALUME® high tensile steel.	
Width	2350	3110
Depth	820	1580
Wall height	1700-1850	

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ZINCALUME® is a registered trademark of BlueScope Steel Limited.

The Garden Shed

A larger shed with increased wall height, and head room, ideal for the storage of larger items such as bicycles, quad bikes, and ride on lawn mowers.

The same monocoque construction as the villa shed, featuring the same large double doors, with two way cam latches and a lockable handle.

Get organised, reduce clutter, and free up valuable space in your home with this larger economical and secure storage solution.

The garden shed is also an ideal solution for the storage of goods in commercial environments such as parks, schools, municipality yards, and indeed anywhere an economic storage solution is needed.

Sizes (mm)			
Base Material	BlueScope SMARTCOLOR™ or ZINCALUME® high tensile steel.		
Width	2350	3110	3870
Depth	1580	2350	3110
Wall height	1800		

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ZINCALUME® is a registered trademark of BlueScope Steel Limited.

Super Tough Workshops

Our premier Super Tough Workshop, is fully framed with a galvanised steel frame, then clad with Smart-Clad in a choice of colours.

The heavy duty industrial door with lockable handle, is the same door we manufacture for use in Industrial buildings and warehouses.

One aluminum framed window comes as standard and can be fitted at either end as requested by the customer.

Optional security grills are available for enhanced security.

This shed is an ideal solution for industrial deployment, for the serious hobbyist, or where a more secure storage solution is needed.

Sizes (mm)				
Base Material	BlueScope SMARTCOLOR™ or ZINCALUME® high tensile steel.			
Width	2400	3600	4800	6000
Depth	2400	3600	-	-
Wall height	2200			

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Dependable Steel's brochure highlights their product range.



The end product: a steel shed using aluminum doors and windows, constructed in the backyard of a home in Dubai.

SM What does sustainability mean for you?

MB If you're talking about growth in Middle East, I'm talking about nineteen ninety two when I migrated here, it was purely a desert with a few skyscrapers around and you could actually in the vicinity of a 30 kilometer radius, you could see The World Trade Center. And now Dubai has evolved in its own way. You can see a lot of skyscrapers today. The UAE government has taken the initiative to urbanize and go for the building of towers, which has got purely steel as a structure and aluminum as the facade with the doors, windows and outer envelope as well. So Dubai and the UAE has been a role model for the GCC. Whatever Dubai has done and undertaken, the other countries around the region, including Saudi Arabia, Bahrain, Kuwait and Qatar, they've been replicating the growth of Dubai. So in terms of growth for myself and my business, it's all related to the growth of Dubai and it has been a stable and sustainable growth.

SM The growth of the city is directly proportional to your businesses. How are you catering to the construction industry currently? I understand that you have two separate entities.

MB Yes, one is purely for trading steel, it's called Steel Masters and that started twenty years back. We primarily deal with steel and aluminum coils and other steel related products for feeding raw material to other manufacturing companies. The second company is Dependable Steel, which deals with the manufacturing of cold form building, providing smaller and modular residential solutions. For this we primarily use steel as the structure and the doors and windows are aluminum and glass.

SM What is your opinion about Dubai with regards to sustainability? I always noticed a denial of the existence of reuse of building materials in Dubai. I think there is a strong emphasis on energy consumption and recycling here more than reuse and I believe there is a huge market for exporting scrap metal for recycling.



Sunday afternoon at Al Abadali Building Materials. The yards are confined within Industrial Area 6 of the Dubai-Sharjah border. This particular yard sells water tanks, hardwards, doors, windows, and sanitary ware.

The Ministry of Climate Change and Environment was set up in 2016. Their legislation does not mention reused building materials and pertains mainly to energy usage.



The Expo 2020 plan for reuse acts more like a guideline than a policy. Emphasis is placed on using recycled aggregate for new concrete production.



Sustainability pavilion constructed for Expo 2020, Dubai.

- MB** Sheikh Mohammed, the leader of Dubai, has created a separate **Ministry for Climate Change and Environment** that deal with issues regarding sustainability here. His motto and focus is go green. That's why when you see when the skyscrapers come in, the first thing is landscaping. Every building and component we supply to, we have to give them a certificate saying that the building products, both steel and aluminum, can be used and sustained. Now even with regards to the Expo 2020, postponed to October 2021 due to COVID-19, out of the four stadium, the main and biggest stadium they created is sustainable, using renewable energy and solar panels, so yes in a way it is about recycling and energy consumption here more than reusing components. But at the same time, you can see the seriousness of the government by setting up a ministry to just tackle climate change issues.
- SM** **How about your own experiences with 'reuse'? I think it's particularly interesting with regards to your own sheds, with the idea of modularity, I think it's designed to be reused within limits of damage and its lifespan.**
- MB** Our sheds are designed to be dismantled and reused. The lifespan of the panels can go up to at least 30 years. We have had the occasional client who wants to dismantle it to take it someplace else. Same is the idea for the doors and windows for the sheds, that you have seen in the reuse market. I think it was important the market has to be brought into the light.
- SM** **What was your first impression from the photographs of the reuse market?**
- MB** It was really fascinating for me. I think it's important that markets like these are accessible to the construction industry. In a way, the same way you connected me to it, the market needs to somehow make itself known to other professionals in the industry. I believe as of now, it's mainly second and third tier projects that the market caters to and I think there has to be exports going out to underdeveloped or war torn areas like Sudan or Iraq. Coming back, steel and aluminum can be melted. So it can be used as it is but it can also be remelted. When we produce the steel and aluminum parts we actually melt some scrap into it as well.



Al Mabrouh Scrap Trading, in Al Saja, Sharjah, takes the initiative to sort reusable items, located at the rear in this image. The lack of government regulations allows the exporters to do as they please.



The footprint of Emirates Global Aluminium, located in Jebel Ali Freezone in Dubai. The size of their operations is equivalent to one of the housing community developments in the City.

Emirates Global Aluminium has been functioning from Dubai since 1975. They own bauxite mining operations in Guinea which is imported into Dubai for the production of raw aluminium. Aluminium production was one of the first industrial activities for Dubai and accounts for about 2% of the overall GDP today².

Extract from a conversation with Nabil Sherif of the company Reclaimed Brick-Tile Middle East.

SM What do you think about the reuse of building parts in Dubai? Contemporary materials?

NS Who reuses parts from contemporary buildings? They crush it down and sell it for scrap, that's what they do here. In terms of new buildings, that literally gets sold for scrap to my knowledge, no one reuses that here. The issue is, old buildings like Victorian buildings, they would reclaim that because that's worth something, this is worth nothing.

Concrete is a material with a high thermal mass. The average temperature of Dubai is 35.5 degrees, making concrete unsuitable for the weather, although concrete is still widely used.

- SM** I think a huge issue with aluminum is the metal's high recyclability rate. It takes about 5 percent of the energy it takes for primary production, due to which aluminum products are exploited to be recycled instead of reused. The scrap metal market for aluminum has been steady for the past twenty years, unlike primary aluminum which has been constantly fluctuating.
- MB** Primary aluminum has a huge market in Dubai and that's why DUBAL has been here for the past 40 or 50 years, so you can see how important it is because its about as old as the City itself. And yes, first time around, energy consumption for the production of primary aluminum is massive. There is a very specific reason for the need for scrap metal. Aluminum is a very fragile and ductile metal. When you add impurities, known as the scrap, we can actually control the metal's hardness, so it's important.
- SM** I had a conversation with an importer of reclaimed bricks from the UK in Dubai, he mentioned this idea that reclaiming contemporary materials in Dubai is just not worth it. But interestingly, I actually think the opposite when it comes to aluminum's strong presence in the City.
- MB** Traditionally in Dubai, there is a certain perception towards using steel for construction. If you go to a residential builder and say I'm going to give you some steel structure, they'll knock on the walls and say that its fragile. But over here the residential builders use concrete and bricks which is terrible for Dubai's climate. That's the reason why our air conditioning bills are so high, concrete traps heat.
- SM** What is the concrete industry in the UAE like?
- MB** It's actually a highly monopolized one. It's all owned by large influential families like Galadari and Al Futtaims, so concrete construction is pretty much the tradition here since the very beginning. If its substituted with steel, the ready mix factories will go bust. It's mainly the skyscrapers and high-rises that use the steel structure. But if you look at the recent residential developments, for community houses like Arabian Ranches, they will question the use of steel for construction. They have always used concrete and bricks.

You can build additional room in Emaar villas

Published Sunday, July 06, 2014

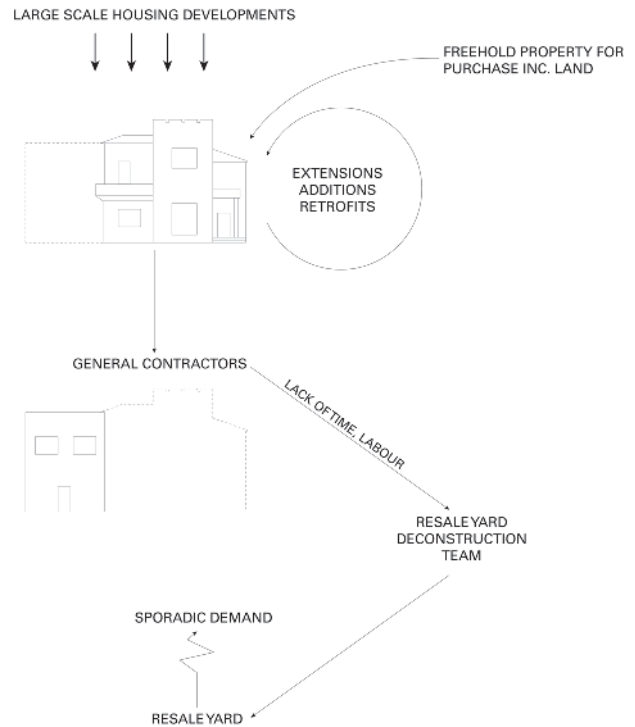
By Shuchita Kapur

For the first time, Dubai-based master developer Emaar Properties is giving approval to its residents in communities like The Meadows and The Springs to construct an additional room in the garden of the villas.

In 2014, building regulations changed, allowing people to make changes to standardized housing within the communities. Published by Emirates 24/7.



The Living Legends community, under construction in 2015.



Current reclamation process and reuse market relating to standardized houses.

The expatriate community in Dubai have only been allowed to [make alterations to their properties](#) very recently, the first being in 2014.

- SM** The residential developments are really interesting because it has actually unlocked a market for [smaller construction projects for individual home owners](#). This in turn is what's creating the stock for the reuse market. It's interesting that there the governmental policy over the flow of materials is lacking.
- MB** What's even more interesting is the fact that the large developers don't take ownership of the materials after allowing people to make changes to the individual houses. So the main issue here relates back to the fact that, in the UAE, the majority of population are expatriate. They come here mainly for the purpose of business and work but also recreational. Ultimately, within the expatriate population, the middle class doesn't exist here. It's mainly upper middle class and beyond that. Within that category, there are very few homeowners, and what they expect is fancy houses. Unfortunately, to make the fancy houses, the materials in the reuse market do not cater to that.
- SM** It seems like there is a very distant relationship with the people and the material environment here.
- MB** Yes, but 100 percent these material components, the doors and windows, can be reused. If it's being taken out very carefully, they can go over at least 20 years without any problems, maybe even more if it's given the care.
- SM** The main issue that's facing the reuse market is the fact that it is clubbed within an area where they sell other second hand items like clothes, auto parts and furniture. There's also the fact that the businesses work in an informal manner, and sometimes they lack the knowledge for working with the materials. They only do their work because for them it seems like the most logical thing to do, deconstruct instead of demolish. These doors and windows then get sold for much cheaper than for a new one.
- MB** The lack of knowledge is something which is actually driving the business. As for the cheaper prices, I would actually say they're being more competitive with the pricing. Cheaper prices come if you downgrade the product.



Sanitaryware for sale at Al Abadali Building Materials.



Doors in transit at Al Abadali Building Materials.

A new aluminium window can range between AED 700 & AED 2,000. A second hand aluminium window can cost around AED 300 at Al Abadali Building Materials.

Chalking is the process by which the existing paint on aluminium gets broken down due to weathering. This is a type of oxidation of aluminium⁶.

These are actually **reused materials at a competitive price**, otherwise you are degrading the product. Contractors are using these materials as well but the issue is they're not being as open about it as they should be.

- SM** **Yes, there's a stigma attached to admitting that they are using second hand building materials. For me, the way forward is for the reuse businesses to establish a clear line of supply towards a primary client. It could also be that they work closely with a primary manufacturer to supply materials to them. It could even be potentially supplying aluminum doors and windows for your manufacturing company, where you guys take ownership of the materials to repair and work on them before using it on your own projects or supplying it**
- MB** See, these could be segregated. Most of the items can be repaired and if not repaired they can go into the export market for recycling. It would usually only take WD-40 or some other polish, to fix them. If it is **chalking**, then some repainting would be required so all these can be done without any issues. It's more of a priority here to take care of the metals because of the environment with the salinity of the sand and very minimal rains throughout the year. Even then aluminum is highly resistant to corrosion, only thing is, it's two or three times more expensive than steel.
- SM** **That's interesting because despite the price for aluminum, that's the only type of windows used here. The other type would be PVC windows but that's mainly for internal use. Coming back to this idea of the sheds, do you think there is a potential to directly use the building components in the design for that? I think the issue of standardized parts can be dissolved if the windows and doors come first in the design.**
- MB** It's a chicken and egg situation. What comes first? Basically, if you are getting competitive pricing for a product that is reused, then we can design the panels according to the sizes of the doors and windows. And they are in absolutely perfect condition. We can testify to whether these doors and windows can sustain and they can sustain, only thing is the design of the sheds need to be based around the materials.



SM For me being on the yard, the materials cannot be differentiated between new and used ones, if not for the minor damages on them. Do you see a growth for the reuse of building materials in Dubai?

MB As of now, the City is only about 35-40 years old. They have been building vertically previously but now the industry is focused towards developing residential communities with housing. At some point in the next generation, the development will come to a standstill and buildings would be past their lifespan. This is when there will be a real possibility for reuse to happen. It is definitely a growing market and I think it's just about changing the mindset and adapting to it.

• • •

Left: An abundance of aluminum doors and windows at Al Abadali Building Material.





The yard at Aladdin's Cave, southeast London.

The Circular Economy Statement

Ele Mun questions the The London Plan Team

Rohan Ranaweera
Senior Strategic Planner, GLA

Rob McNicol
Policy Planner, GL

David Cheshire
Sustainability Director, AECOM

Andrea Charlson
Built Environment Project Manager, Circular London

“We definitely need to have the infrastructure in place and the kind of land to support re-use.”



The Greater London Authority had announced a call to action for London's construction industry. Fifty-four per cent of the waste generated in London every year is from the built environment¹ – this is 400 million tonnes. With close to 50,000 planning applications approved in London through the 12-months to June 2020 alone², and with still ambitious plans to “build back better”³ in the wake of the pandemic, these volumes are bound to increase. The introduction of Circular Economy Statement is timely.

Announced in late-2019 and due to be published and fully implemented in mid-2021, the guidance calls for additional documents to accompany planning applications made referable to the Mayor. These statements are to “demonstrate how a development, including any public realm and supporting infrastructure, will incorporate Circular Economy measures into all aspects of the design, construction and operation process.”⁴

A closer look at the CES' pre-consultation draft, however, tells us this: while there is a clear acknowledgement of the waste hierarchy in its introductory pages, nothing in its 'new' mandates show any differentiation between reuse and recycling – this does little to encourage a shift away from the status quo of careless demolition and subsequent recycling (often times down-cycling) of materials.

Furthermore, research shows that privately-owned reclamation yards – key players whose shoulders the UK's circular building industry falls upon – are dwindling, both in size and in numbers. The demolition and construction industry now practices with a collective consciousness that privileges as-fast-as-possible turnover rates, how could the comparatively arduous process of salvage compete with the expedience of recycling?

An online meeting was organised by the London Plan Team, during which a few key players had presented their role in the drafting in the statement. This session had culminated in a Q&A session, where we got to ask if anything was being done for existing yards.

1 Mayor of London, “Circular Economy Primer” (Greater London Authority, 2019).

2 Kieran Graves, “Which London Boroughs Have the Highest Planning and Development Rate?” *SW Londoner*, December 2020.

3 Prime Minister's Office, “‘Build Build Build’: Prime Minister Announces New Deal for Britain,” June 2020.

4 Mayor of London, “Circular Economy Statement Guidance: Pre-Consultation Draft” (Greater London Authority, March 2020).

Meeting held on Zoom
25 November, 2020



Rohan Ranaweera

Rob McNicol

David Cheshire

Andrea Charlson

AECOM

LWARB
London Waste and Recycling Authority

advisors

The CES, due to be implemented mid-2021, mandates that projects that become referable to the Mayor of London are to submit, along side with the statement, a Bill of Materials (inflows) and a Recycling and Waste Reporting Form (outflows).

The specific targets, in short, are:

min. 95 percent in recovery rate (outflows).

min. 20 percent in use of recycled materials for some elements (foundations, roof, etc).

MAYOR OF LONDON

CIRCULAR ECONOMY STATEMENT

GUIDANCE
PRE-CONSULTATION DRAFT

GOOD GROWTH BY DESIGN

2
CIRCULAR ECONOMY CONCEPTS

2.1. Context: What is the Circular Economy?

2.1.1. A Circular Economy is defined in draft London Plan Policy S17 'Reducing waste and supporting the Circular Economy' as one where materials are retained in use at their highest value for as long as possible and are then reused or recycled, leaving a minimum of residual waste.⁵

2.1.2. The end goal is to retain the value of materials and resources indefinitely, with no residual waste at all. This is possible, requiring transformational change in the way that buildings are designed, built, operated and deconstructed.

The diagram shows three models: 'Linear economy' (a straight line from a trash can to a trash can), 'Recycling economy' (a loop from a trash can to a recycling bin to a trash can), and 'Circular economy' (a loop from a trash can to a recycling bin to a trash can, with a circular arrow indicating continuous reuse).

FROM TAKE • MAKE • USE • DISCARD TO RE-MAKE • USE-AGAIN

2.1.3. A Circular Economy stands in contrast to our current linear system, where materials are mined, manufactured, used and thrown

5 Policy S17 Reducing waste and supporting the Circular Economy https://www.london.gov.uk/assetuploads/Referenced_to_publication_.../04-20-20.pdf

16 CIRCULAR ECONOMY CONCEPTS

The Reuse/Recycle Conundrum

EM Thanks everyone for your presentations. There's been a clear distinction and preference for re-use over recycling in the pre-consultation draft of the Circular Economy Statement guidance, in writing but perhaps not so much in its policies.

Since recycling has already been relatively well established, are there any infrastructures being put in place (i.e. policies, storage space etc) to allow key players in the C&D industry to privilege re-use over recycling?

Research from **BigREc** and **MiniREc** from 1998 and 2012 shows that there's been a gradual decline in re-use in the UK.

The current practice is this: demolition contractors, should they so choose, would dismantle the low-hanging fruits of a building and leave them on site to be assessed and potentially collected by salvage dealers.

Especially in dense urban contexts such as London, a lack of storage spaces on site has long been one of the many logistical bottlenecks in the reuse process.

The alternative here is for the materials to be brought out as soon as they are dismantled and before they start clogging up the demolition site ; but where would they go, then ?

Do existing yards have the capacity to handle more materials than they already do now ?

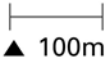
Also, related to this first question—material re-use has seen a gradual decline in the UK, other than advances in recycling technology, one other reason for this is that privately owned reclamation yards are shrinking both in size and in numbers (given rising land values and operating costs etc.) thereby reducing the amount of reclaimed materials in stock.

How relevant are privately owned reclamation yards in upholding the ambitions of the Circular Economy Statement ? Will they be supported through subsidies, for example, to continue promoting re-use? Seems like that'd be the best, most straight-forward thing you could do.

RR Yeah... I don't think that there are any specific policies that are doing the things that you've mentioned, like for example storage spaces—those are potentially good ideas and we definitely welcome that feedback in the consultation.

But there's definitely a need to have a kind of infrastructure available to support the re-use economy. Part of the work we're (GLA) doing which is kind of separate from the Circular Economy Statement but in the same domain—and I'm also doing it—is about waste planning, so ensuring that we have adequate land for waste management and supporting sites that come forward and that want to drive things up the waste hierarchy.

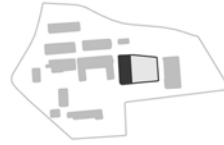
But I think the point is that we definitely need to have the infrastructure in place and the kind of land to support re-use.



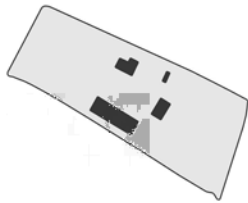
clearaway reclamation
tonbridge



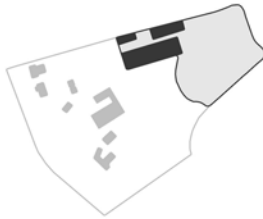
woodlands farm rec.
guildford



treesave rec.
bures



dds salvage
margate



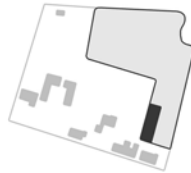
symonds salvage
ashford



colchester reclaim
colchester



vintage floor tile co.
tenterden



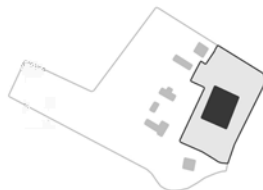
t caudwell bricks
maidstone



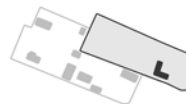
reclaimed uk
chingford



authentic reclamation
wadhurst



portal power
stowmarket



js buyers and sellers
bordon

12 of the largest reclamation yards within 2.5 hours drive from London. A total of 34 reclamation dealers were identified and the total footprint roughly adds up to 80,000m².

In other words, an area only around 5 percent that of Regents Park is left entirely responsible for the handling, processing, storing and reselling of nearly all salvaged materials coming out of London – with rising land values, this area is slowly declining.

DC Thank you, Rohan – that’s really good to hear. For me, I think what’s interesting is that by implementing this policy and the guidance, hopefully what it does is that people start to see opportunities to set up more of these yards. Like you said, it has been declining over time, but we’re now already seeing some new organizations, there’s some guys now that will re-manufacture waste into floor tiles. I believe that more and more of these sort of brokers will spring up—people who will take stuff from buildings, clean them up, re-manufacture them, re-warranty them and then sell them back to make money are definitely coming in.

Urban mining is really becoming a thing, you know. So I think there’s money to be made and businesses to be set up, and we’re hoping that the Circular Economy Statement will help to create a fertile environment to do that.

AC Yes, we’ve been having a number of conversations with some of London’s boroughs as part of their green recovery strategies, considering the ideas that the circular economy is hoping for, for example, centres for innovation and re-use and re-manufacturing and re-testing and for that kind of innovation that David was describing, so I think maybe it’s starting, that kind of momentum is hopefully building up.

Andrea is referring to minimum reuse and recycling requirements for when you demolish a house built before 1950 in Vancouver.

Additionally, a deconstruction requirement applies when you demolish a heritage listed house, or a house built before 1910. This was implemented back in 2014.

But we can’t underestimate the impact that this kind of policy can have in terms of stimulating the market. So I was speaking with some people quite randomly from Vancouver’s waste management department a few weeks ago and they were saying that they implemented a new policy that said that certain types of buildings have to be deconstructed and not demolished.

This new policy has stimulated a demand in the re-use market because suddenly there were materials available because these buildings have been dismantled carefully rather than demolished, so these types of policies can provide market stimulus as well.

London Plan Policy 4.4 - Managing industrial land and premises. The GLA works with boroughs and other partners to ensure that there is a sufficient stock of land and premises to meet future needs of different types of industrial and related uses in different parts of London, including for good quality and affordable space.

RM Just to re-iterate what Rohan was saying with another hat on – I've worked on London's industrial land policies and the implementation of those, there's obviously a lot of waste-sites and sites that might be looking at doing sort of circular economy work in industrial areas and we're really keen to make sure we're retaining London's industrial capacity across the city. A part of that is to make sure that we're providing sufficient capacity for what we now know can be an increase in the demand for waste uses, because of the new circular economy sites that might take up more space than other sort of waste uses might traditionally have done, so... anyway, moving on to another question...



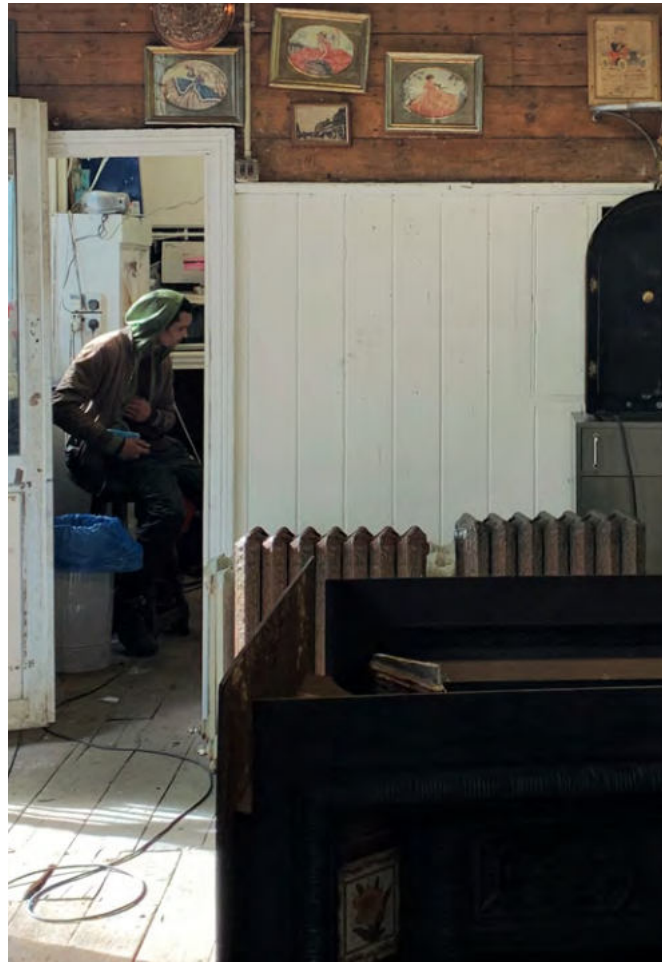
Shrinking Cave

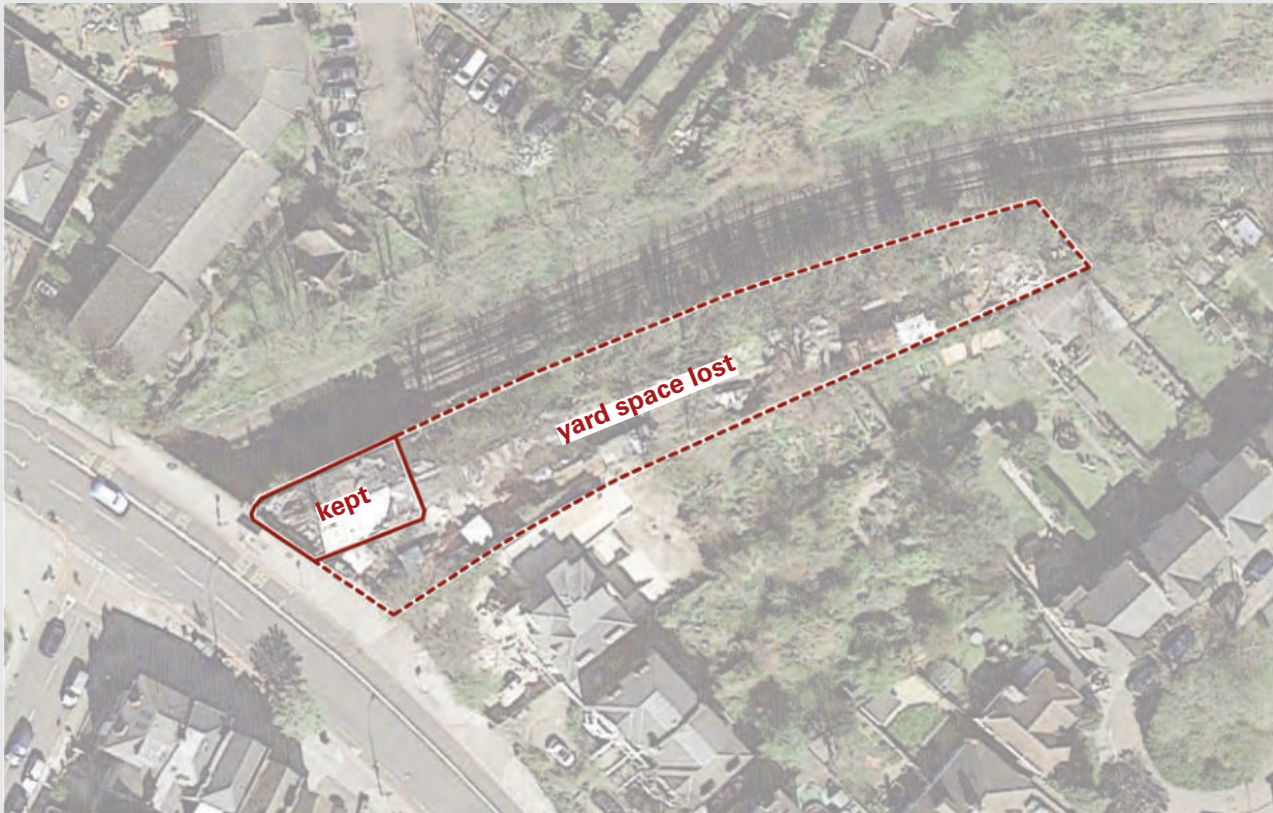
Ele Mun in conversation with Gary and Leon from Aladdin's Cave

Just about two weeks before the presentation from the London Plan Team, we visited a reclamation centre in Lewisham, south-east London.

We found Leon sweeping away fallen leaves in the now half-empty yard. The following text is edited from the conversation that followed.

Aladdin's Cave, Lewisham
14 November, 2020





Please Save Aladdin's Cave!

GoFundMe link: [gf.me/u/jcjdj](https://www.gofundme.com/f/gf.me/u/jcjdj)
 Telephone 02083202553/ 07964624322
 Email : aladdinscave32@gmail.com
 Facebook www.facebook.com/aladdins.cave.773
 Address: Aladdin's cave
 72 Loampit Hill
 Se137sx
 Instagram: [@_aladdins_cave_lewisham](https://www.instagram.com/_aladdins_cave_lewisham)

Save

Aladdin's cave
 Renovation campaign
 @_aladdins_cave_lewisham

Our plans and vision for the future of Aladdins Cave, we are replacing the old roof on the building which was Lewisham Road Train station opened in 1817, we are looking to keep much of the original interior as possible and planning to transform the outdoor space into a food and drink venue for the local community to enjoy. We have a GoFundMe page to help us reach our goal and keep this local landmark here for many years to come, any donations will be greatly appreciated. We would like to Thank all of our loyal customers over the years and look forward to welcoming you back.

The correct links are below pls feel free to contacts us for info:

GoFundMe: [gf.me/u/jcjdj](https://www.gofundme.com/f/gf.me/u/jcjdj)
 Email : aladdinscave32@gmail.com
 Facebook www.facebook.com/aladdins.cave.773
 Telephone 02083202553/ 07964624322
 Instagram: [@_aladdins_cave_lewisham](https://www.instagram.com/_aladdins_cave_lewisham)

Yard with a History

EM Could you tell us a bit about the yard?

GR This building has been standing here since 1871, it used to be Lewisham Road Train Station. It was going to be sold and turned into luxury flats, there's quite a bit of history behind this place. There was a crash between two trains - 132 people injured, around 90 people died. After the station closed it was leased to Boy Scouts, then it became a coffee shop, and then a salvage yard. The current owners took it over just over 20 years ago.

EM There's a lot of history to this building, then.

GR Yes, it's a really old building. We've just pulled a part of the ceiling down, we're doing a bit of a restoration soon. Everything outside here in the yard is going to be cleared – we've got Brixton Jamm, they're a company that does food & drink venues, they will be renting the outdoor space off of us.

Downsizing

EM You're downsizing, then?

GR Yes – everything from the two ends of this building will be us, we'll still be doing the antique and furniture stuff but the rest of it, everything in the outdoor yard, they're going to be completely cleared away. There will be decking going on in the garden, tables, chairs and up to six marquees that's serving food & drinks, and then there's going to be a long drinks bar along here.

EM Sounds fun. Are you looking forward to it ?

GR Well, hopefully if everything gets up and running again - we're just waiting for it to go through Lewisham Council at the moment. We're having a few issues with that but hopefully once the situation with COVID improves, we'll be up and running by early next year.

The building was once a railway station on the lost Greenwich Park line. Planning permission was granted in 2018 for it to be demolished, and for the construction of a three storey building in its place. The plans didn't go through in the end and Aladdin's Cave will still be operating from 72 Loampit Hill. But the outdoor yard space is to be rid of and rented out to Brixton Jamm.



“... it is clearly not a building that is of note for its value, interest or contribution to the area,” as concluded in the developer funded Heritage Statement submitted in 2018 as part of the planning applications for new residential developments pictured above.

78. The booking office was a modest little structure that was evidently built on the cheap and had no architectural pretence. Today it is dilapidated and partly subsumed by unsightly modern accretions, as part of its present use. There are no indications of any specific historic interest in relation to the St John’s Conservation Area or the setting of the Brockley Conservation Area. The building is without any notable or redeeming features that would elevate its interest or contribution to the area. It can be said to make a marginal positive contribution to the conservation area as a residual Victorian structure, but it is clearly not a building that is of note for its value, interest or contribution to the area.

Material Sources

EM How focused on building materials would you say the yard is?
There's quite a lot of antiques and period pieces.

GR So this pile of limestone, we get things like that in every now and then - sometimes we get bricks, things like that. It all depends on what sort of stuff the boss buys, what people are trying to get rid of. He goes and clear houses, he clears restaurants, he clears buildings.

EM He runs a demolition company as well ?

GR He does salvage, he goes and collect lots of metals and things like that, lots of other stuff – but mainly **what we're doing from now is the antique furniture stuff, they just sell a lot better in these parts.**

Yard Space

EM It's not an issue of space that you don't bring in a lot of building materials, I suspect? The yard is huge.

LE We've got loads of space. It goes all the way back there! It's quite unusual in London, not just for a salvage yard but even to have an empty plot like this. That's why they wanted to tear this old building in the front down and build luxury flats here, it was going to be done similar to next door. The plans were actually in line still but it's not going to be happening now. We're staying. That's why Brixton Jamm was coming in: they saw the space we've got.

EM I guess financially it does make a lot more sense to rent it out than to run a salvage yard in this area. Most of the other yards we've seen were way further out where land values are not as high – they're huge. Here's one that we saw in Colchester [shows picture].

LE Okay... Oh wow, shit...

EM Yeah, they're huge, these ones. They sell a lot of building materials, loads of bricks, roof tiles, oak beams, things like that. Not so much here anymore, no?

LE We did have a lot of those, we've cut down now. New management, the son's taken over – we're going to do a bar and all out in the yard.

EM I suppose it's way more lucrative to rent the space out than to have mounds of bricks and stones and whatnot sitting around.



Low value building materials slowly being packed away. Aladdin's Cave had used to hold a decent stock of such materials, i.e bricks, stones, tiles – now that the yard is shrinking, one wonders where future otherwise salvageable materials would end up.



LE It is. For building materials, space is a problem. We do get them like this pile of limestone over here – these were from a house up in North London. It's already taking up half the entrance. They're for sale still, it's going to go away by next week, I think.

Where does everything else go?

EM **Do you have any idea about the kind of volumes of materials that the demolition of buildings around this area throws out?**

LE Well there are a lot of flats even just along this street that's constantly being gutted and refurbished, old materials ripped out. Like that big house right over there, imagine all the old materials and stuff, they just rip them all out. Even we tried to get some of what they had, we could only bring in a some old fireplaces, some picture frames, what was originally put in when the house was built. We got some of it but there were lots more, no idea where they went myself. Imagine all these places that they're demolishing in the whole of London, and there's a lot of them.

EM **And yet many of the reclamation yards with enough space to potentially take them in, they exist outside of London.**

LE That's right, and what I mean is, where's all this stuff going to? The places that would offer them a chance are so far out. Imagine all these houses, we could help them get the stuff but we can't just get everything, we haven't got the space especially now that we've got plans to rent out the outdoor space. Hold on a minute, let me just... [serves customer who's just walked in].

No doubt

EM **One last thing. What if this was up to you? Would you have done the same, rent the outdoor space to someone else to turn a better profit, knowing that it's now less area for salvaged building materials from around the neighborhood to come into?**

LE [rolling a cigarette] I would, no doubt, no doubt, man. It makes sense, having all that space out there now, it's not really doing anything. We're able to continue selling these antiques here but everything out there, they will go... they're going.





||



Government owned reclamation yard, Malmö.

Material Flows in Sweden in conversation with CCBuild

“To go from the vision of reuse to realising it – we are starting to get there.”

Johanna Andersson
Project manager at CCBuild
Employed by IVL (Swedish Environment institute)



Johanna Andersson is on commission by IVL (Swedish Environmental Institute) working to increase the reuse flow within the Swedish business sector. She is one of the creators behind the online platform CCBuild which facilitates this flow with an online marketplace. Johanna has experience within the construction industry and has worked both for a contractor and construction company.

The government in Sweden have a great role within the reuse market and there are several reclamation yards, research projects and platforms for reuse that the government funds.

There are two main flows of reclaimed materials. Firstly, there is the private sector's material stream which goes via the reclamation yards. The material is usually bought for domestic renovations and DIY projects. The reclamation yards can sell material that requires labour-intensive preparation such as tiles and bricks as the scheme is often combined with governmental rehabilitation programmes.

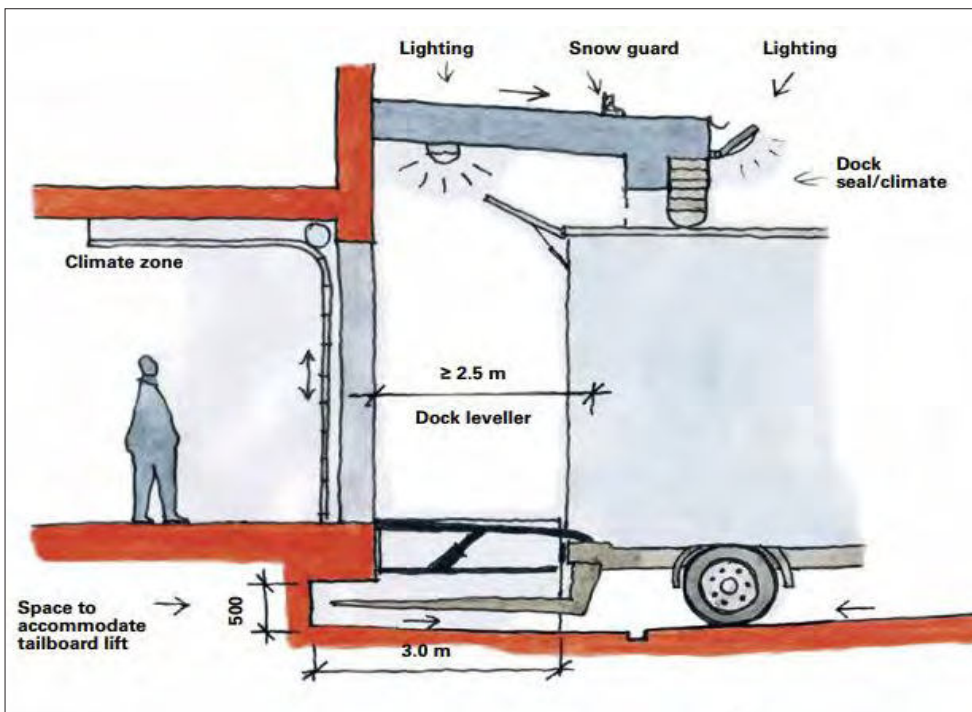
The second flow started in 2015 and is the one created by CCBuild, targeting the large companies in the Swedish business and property sector. Used material are directly sent from one site to another, or reused within the same property via their sales platform. The materials include office furniture, partition walls, glass partitions, doors and so on.

During a discussion with Johanna in November 2020, we talked about the circular material flows and challenges and progress in the Swedish reuse market.

Interview held on Microsoft Teams
27 November, 2020



Material storage at Kompanjonen, a company that has been a connected to CCBUILD's platform since the beginning. (image: kompanjonen.se)



CCBuilds website in 2020. It is a nationwide platform where actors from the construction industry can meet and collaborate on reuse and circular economy and sell and buy used construction material. (ccbuild.se)

- AN** I understand that IVL has started to work with reuse on a large scale, sending material directly from one site to another. How would you describe your role in the Swedish reuse market?
- JA** IVL is a research institute, and our mission is to raise the ongoing environmental questions and influence the Swedish business sector to work with them. Reuse is one of these questions, and we started working with it in 2015. That is also why we work so much with interiors and furnishing. Vasakronan, one of Sweden's largest property owners, is doing refurbishment every 2-3 years or so, and large amounts of material got thrown away. A market did not exist here as nobody in the private sector wants glass partitions that have been used in an office. So that market did not appear on its own. There is also a second hand-market via Blocket, for private actors today, but it is a relatively small market. What we mean with 'industrial scale' is to create a good system, so that whenever someone needs to refurbish or renovate a building, the material is taken care of to be used in a new building, or to be moved within the same building. If a wall is knocked down, maybe the door can be saved and used again during that renovation. If the property owner doesn't need the material anymore, the next step is to sell it further.
- AN** Do you see the guarantee and liability question as a challenge in the process when reusing materials?
- JA** Yes, for example, the liability disappears from the producer when HVAC entrepreneurs reconstruct light fittings, which is a challenge. Therefore, we've worked a lot with those products that don't require guarantees, such as doors.
- AN** We have been working on a map where we pin out reclamation yards in various countries, and I've looked at Sweden. What struck me is that in Belgium, for example, there are many more material re-sellers compared to Sweden.
- JA** It would be interesting to see that map because it is that type of research that we don't have time for doing. We get questions about it often, and the demand is big. They might not be for the group we work with, but we might be able to impact them by saying that there is also a new client base, who wants other types of materials. They probably already have a full working system. When it comes to material flow, have you seen our market place?



Outdoor storage area at *Halmstad Byggåtervinning* a Wednesday afternoon in October 2020. It is a state-run reclamation yard in outside the city of Halmstad in south-west Sweden.

AN Yes, I have looked at it briefly.

JA We are about to develop a couple of digital services. It is a digital material bank where you can upload all products you hold as an organisation; it could either be a property owner or the salesman. When the organisation later wants to sell the product, they can announce the product on the platform. It is the company themselves that resells the product, so there is no middleman. There is also a lot of companies that use it as an internal material bank for the company. Least barriers are achieved if you can manage to move the products within the same company and don't need all the economic transactions.

AN Okay, the version that has been running for a while then, which products are most difficult get sold on the platform?

JA It is hard to say, but doors and glass partitions are sold easily. Brick has a high demand even though it is so expensive. It doesn't become cheaper with reused bricks.

AN Are there any statistics on the construction and demolition waste that is being reused?

JA Yes, I can imagine, very difficult, but what do you think about the reuse in Sweden? Has it changed in the past years?

AN Naturvårdsverket measures waste via SMED, and they create reports every second year. But the reuse stream is hard to measure; it doesn't exist at the moment. It is because a lot of materials are being reused within the same property - and should that be included? All those things never go via a system.

JA The interest has increased significantly over the last year. We have been working since 2015, back then it was only the pioneers such as Vasakronan who was early on, and they have worked a lot with it. But to go from the vision of reuse to realising it – we are starting to get there, not only with pilot projects. In a couple of years, we might have it as a standard process. Just the last half of the year it has happened a lot.

AN So, Vasakronan was early on reuse, is there anybody else who stands out particularly? Property owner, architect, contractor..?

SMED, the Swedish Environmental Emissions Data, started in 2001 to gather and develop expertise in long-term emissions statistics.

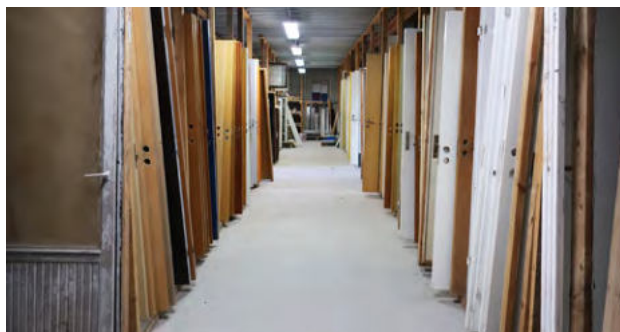
Vasakronan is a Swedish real estate company owned by the government and the national pension funds.



Monday morning at the state-owned reclamation yard in south of Sweden, Malmö Återbyggnadsdepå. October 2020.



Brick batches from a recent demolition in Malmö Harbour. (Malmö Återbyggnadsdepå).



Halmstad Byggättervinnings door selection, also a reclamation yard run by the government.

White Arkitekter is an architectural firm based in Gothenburg. It is the biggest firm in Scandinavia, with over 900 employees.

Tengbom is a Swedish architecture company founded by Ivar Tengbom. It is one of Europe's oldest architectural firms with its headquarters in Stockholm.

PBL (Plan och Bygglagen) is the Swedish law that regulates land use and construction.

JA Many people try and it is a hot marketing tool right now. But those who have worked a long time is the architect firm White Arkitekter, as well as Tengbom. On the entrepreneur side, it's happening a lot. Finally, they start to wake up. Maybe also because the material fabrication is aligned with reuse as well, the whole value chain has to be on-board. This summer, it came a new law to the PBL, everyone has to make a material inventory, for reuse and recycle to get permission for demolition. You now have to list all material that can be reused. I think this will become a driving force for more company to reuse. But, what I can see, there is not any regulation on what to do with this inventory afterwards. It seems a bit like the climate declaration, and you should have one but no requirement on where it should be located and on what scale. I think it is rather about making the products visible and it will probably result in more selective demolition.







Glasgow Wood Recycling

Social Value in Reuse

Nikitas Papadopoulos in conversation with Elizabeth Green & Alex

Elizabeth Green – Community Wood Recycling

Community Wood Recycling & The Social Enterprise
Corporate Relationships

Alex – Glasgow Wood Recycling Tour

Glasgow Wood Recycling Operations
Volunteering & Training Programs
The Social Enterprise within the Scottish Network
Expansion Plans
Reaching Out

“People arrive here from anywhere around the community as a way to deal with several issues they might be facing. The better the trading operations do, the more people we can help.”



Alex, Glasgow Wood Recycling.

Glasgow Wood Recycling is a social enterprise and charity established in 2007 as the Glasgow enterprise of the nationwide Community Wood Recycling Program. The enterprises main activities are concentrated in reducing the amount of wood needlessly going to landfill by finding creative and socially inclusive ways to reuse. The social enterprise operates from its South Street workshop and warehouse in Whiteinch. They construct furniture for garden or internal use with reclaimed timber from various sectors. Through these activities, the enterprise provides volunteer and training opportunities to the surrounding community, as a practical way of tackling unemployment and social exclusion.

The first conversation represents an extract from a conversation with **Elizabeth Green**, the Enterprise Development Coordinator at Community Wood Recycling for the whole of the UK.

The second conversation was undertaken with a former volunteer and current employee named **Alex**. He marks a prominent example of the type of individuals that have been empowered by the networks of social enterprises within Scotland. Alex joined GWR in 2011 as a volunteer following difficulties in finding other occupation. As a result of training undertaking through the volunteering program Alex was later officially employed by GWR to continue his work.

Scotland, is considered by many to be a leading actor in the role given to social enterprise within its economy and future governmental strategies. Its long history of communities mobilizing themselves under a trading banner comes as a direct result of labour difficulties, de-industrialisation, economic recessions and the subsequent privatization during the Thatcher era. Social Enterprises have become a vital aspect of the Scottish economy and culture. With a large number of those social enterprises undertaking trading activities relating to the reuse economy. As of today, 66 percent of businesses operating in the re-use economy in Scotland are charities/ social enterprises.

Under these pretenses, the social enterprise appears to be in a strong position in affecting trends that will eventually lead to the promotion of reuse in Scotland.

The National **Community Wood Recycling Project** (NCWRP) was founded in 2003 to help set up and develop a nationwide network of wood recycling social enterprises. The aim of these enterprises is to save timber resources that would otherwise be landfilled and create sustainable jobs, as well as training and volunteering opportunities, for local people. Together, the NCWRP and local member enterprises form Community Wood Recycling.

Social Enterprise A social enterprises are defined as a business that have specific social objectives that serve its primary purpose. They seek to maximize profits while maximizing benefits to their immediate society and environment. Their profits are principally used to fund social programs such as volunteering and training.



WASTE WOOD COLLECTION SERVICE

SAVE resources REDUCE costs CHANGE lives



Our social enterprises provide the very best environmental option for dealing with wood waste



info@communitywoodrecycling.org.uk

01273 20 30 40

www.communitywoodrecycling.org.uk



Community Wood Recycling annual brochure illustrating the services throughout all individual social enterprises/charities, including waste collection, bespoke furniture manufacturing, product and material deliveries, volunteering and training services.



The organizational structure along with the marketing and sales departments of CWR means they are able to capture some of the biggest contractors in the UK as recurring clients.

Community Reuse & The Social Enterprise

Nikitas Papadopoulos **What is the purpose of the Community Wood Recycling project?**

Elizabeth Green The purpose of the Community Wood Recycling enterprises is to bridge the gap between community led material reuse and large construction companies that operate on a bigger level throughout the country. Waste collected in a particular community should be appropriately used in the confines of that community. Our network of individual enterprises throughout the United Kingdom could provide that while working alongside bigger contractors.

We believe there's some sort of efficiency to that approach. If you, let's say want to reuse timber, then the best thing to do is to reuse it locally, we know there's a demand for reclaimed wood, and in an appropriately distributed network we know we stand a good chance of being able to serve that.

We are now roughly 30 enterprises operating throughout the country. They all operate as independent businesses. The central branch handles sales and marketing while the enterprises operate the logistical manufacturing side. In this way we are able to serve larger corporations operating throughout the country by assigning jobs to the branch located nearest to the proposed construction site. On the national level we operate with larger companies. Our local social enterprises though have a much deeper relationship with their local community.

NP **What is the importance in running the whole initiative as a social enterprise?**

EG The purpose of the organization is not a monetary one. Our purpose is to attempt to make difference in the departments that we feel matter. The limitations with running a for-profit business is that you unavoidably need to reduce your operational costs to the minimum. A primary way of doing that would be the reduction of wage costs, resulting in the reduction of employees. Under that model we can't operate like we want to. Along with environmental goals we have social goals.



Glasgow Wood Recycling's newly acquired warehouse space: sitting at limited capacity waiting for new material supplies to be delivered.

Corporate Relationships

EG Goals that are related to providing work and training for disadvantaged people. Rather than trying to work with as few people as possible, as the for-profit business requires we attempt to create work. We want to create social outcomes. That's reflected in the fact that we are social enterprises or charities. For us the real key is the relationship we build with our corporate customers. These companies obviously want to be seen as environmentally friendly. What's becoming more apparent is that these corporations also want to be associated with the social program provided by our social enterprises. The social value's importance has been increasing substantially over time.

In order for that value to be shown to someone we need to find ways to quantify it. What we have been able to do is produce a metric that illustrates how many job opportunities we provide per tonne of wood collected. That can then be reflected in our price tag so that we can continue to help more people.

NP **Recent studies have shown that reuse has been gradually decreasing in the UK. There are a few reasons for this. Land value being a major one. Its observed that salvage yards are decreasing in size because land is too expensive to be used purely as storage.**

EG The main way land value affects us is setting up our wood recycling enterprises. Our requirements for space to unload the trucks in, space to store the wood and then a light industrial unit to fill with waste wood to sell to the public reduce some of our options. High land value makes it really hard to find a particular property. Particularly in certain parts of the UK. That's one of the main reasons a branch is not operating in London. Because of high land values, our flagship store in Brighton was forced to operate on "meanwhile" locations.

Sites between the process of being acquired and developed. While the site is empty the social enterprise can occupy the site temporarily. The problem is the uncertainty that comes with it. This resulted in the store being relocated several times over that past 5 years. The uncertainty of short term leases doesn't allow the enterprise to invest what is required into its location. We have attempted to acquire a permanent location numerous times but unfortunately someone with deeper pockets was able to outbid us.

"Construction & Demolition companies have reduced yard space [over past 2 decades]" (Resource Futures Report: The Market Potential and Demand for Product Re-use, 2012.)

GLASGOW WOOD RECYCLING

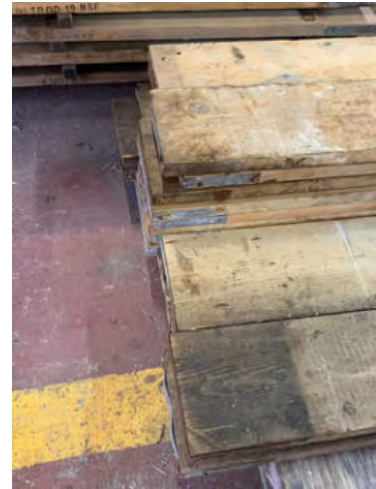


Glasgow Wood Recycling: Newly acquired brick clad warehouse building for the storage and showroom of timber products on the banks of the Clyde River at Whiteinch. The social enterprise is located on the second bay of the industrial complex surrounded by engineering companies.

Volunteer produced reclaimed timber furniture sitting in the half empty workshop due to Covid-19 restrictions. Under normal circumstances the workshop would be operating at full capacity with volunteers, employees and trainees in the workshop



Untreated raw salvaged scaffolding boards arriving from contractors/scaffolding companies or the oil & gas sector. Visible oil stains can be observed on the boards from their previous life.



Cleaned and treated reclaimed scaffolding boards. Following restoration the boards are stacked for delivery within the next few days.



Glasgow Wood Recycling Operations

Nikitas Papadopoulos

I am shocked by the sheer material quantities of reclaimed components in stock here. What is your primary trading product?

This conversation took place on a rare sunny day in November on the banks of the Clyde at Glasgow Wood Recycling's warehouse and workshop. Upon arrival at the brick clad industrial warehouse I was welcomed by a company employee and former volunteer, Alex, and he generously gave me a tour of the premises.

Glasgow Wood Recycling is a social enterprise located in Whiteinch, Glasgow specializing in the collection and sale of timber waste products. The enterprise itself sits under the banner of Community Wood Recycling that operates throughout the UK. The stock is primarily comprised of reclaimed timber scaffolding boards provided by scaffolding companies and the oil and gas industries. The company operates a workshop responsible for the cleaning and treatment of the timber products.

Alex Because of the nature of the supply chain in the reuse sector we really end up stocking a large variety of items. From surplus hardwood to scaffolding boards. The primary commodity that we deal with I would say though is the reclaimed scaffolding boards. The premise of the project began as a pilot 12 years ago and has since become the staple of the GWR branch. We have managed to get a stable supply chain of the material and demand has certainly picked up over the years.

NP **You mentioned steady supply chains for the scaffolding boards. From past conversations with resellers of reclaimed components this seems to be a major hurdle in the growth of the trade. How did GWR end up achieving a steady supply chain in sector that has that is famed for its scarceness of its material?**

A The boards have definitely become our staple for that very reason. In reality the supply chains for them come from several different industries. Construction industry actors such as large contractors and scaffolding renting companies are slowly switching over to steel scaffolding because of longer lifespans. As a result all scaffolding timber components would have ended up in landfill or incineration. GWR intersects that transfer in order to provide them with a second life.

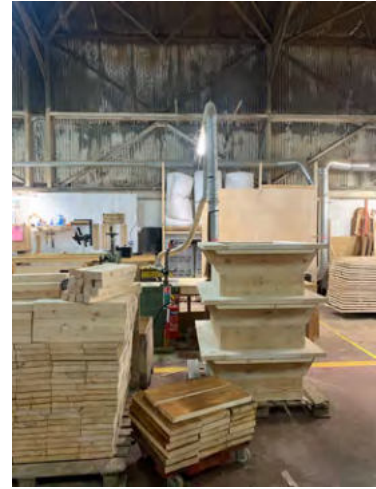
Surprisingly though, a large proportion of our stock comes from the oil and gas industries. Instead of them discarding the entirety of their previous stock of scaffolding boards we offer to take remaining surpluses and reclaimed boards. As a direct result of that these organisations want to increase their environmental credentials, so it becomes beneficial for both parties. The fact that the boards arrive at standard sizes of 55-60mm in depth make them much easier for us to work with as well.

Pointing to two piles of cleaned and uncleaned scaffolding boards.

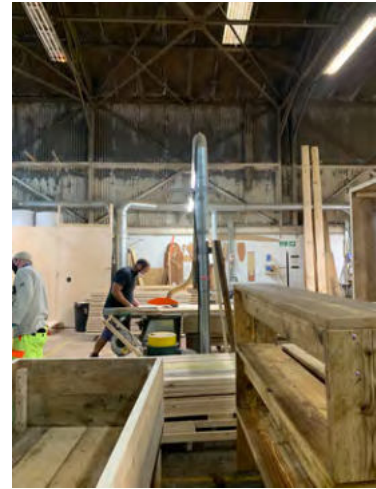
NP **I can see that a fair amount of work has been done in order to clean the boards. Would that be the standard procedure as to how they arrive and how they are later stocked for sale?**

A The boards arrive at the workshop at standard thicknesses as mentioned before at around 220mm wide. The volunteers then take care of cleaning and reorganising the boards in order to prepare them for sale or any other possible purpose that we might find for them here.

Planters /Dividers/Seats
commissioned by Glasgow
City Council (Through
CRNS) to be used as
dividers for public spaces
during the Covid-19 crisis.



Some of the few remaining
volunteers at work at the
premises of GWR workshop.



Volunteers undergoing
required training.



Volunteering & Training Programs

- A** The straightforward applications allow for people without much experience to use them. The majority of clients are either individuals undertaking soft renovations or small contractors.

As the tour progresses weaving through the workshop we encounter a large amount of people undertaking carpentry work for the production of furniture.

- A** The production of furniture from reclaimed material was a substantial operation of the business of the social enterprise since its inception. We still offer a range of services relation to furniture production. Our services range from bespoke furniture to the clients specification to catalogues of our own range of products designed by the social enterprise. More recently we have managed to undertake bigger commissions relating to that.

Pointing to an example of the procured work.

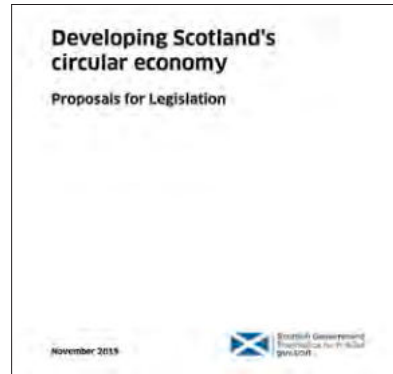
Glasgow City Council procured us for the production of raised planter beds as public area dividers due to the Covid-19 situation.

I believe most things are made in the workshop here. Our workforce consists of some full-time technicians but the majority of people here come as part of the volunteering program. The type of volunteers we usually get are people that are having difficulties adjusting to society, primarily mentally or socially. They are people from all around the community that are welcome to work here as a way to combat whatever issues they might be facing. The volunteering program offers people a certain amount of training that they otherwise wouldn't be able to get. Some people once they end their volunteering programmes end up being hired as full time employees. Just like myself.

At the moment it's a volunteering programme partly funded by the state. People arrive here from anywhere around the community as a way to deal with several issues that they might be facing. The better the trading operations do, the more people we can then help around the neighbourhood.

The organisation is run as a social enterprise, making us eligible for grants that then allows us to help other people. Everyone is welcome to come here.

Scottish Government's proposals for legislation relating to reuse/recycling 2019. This marks the latest document by the Scottish government in their attempt to promote a more circular economy.



“Legislation: Mandatory reporting of waste and unwanted surplus stock. Encouraging the reuse and redistribution of unwanted surplus stock...”
 Developing Scotland’s Circular Economy, 2019



The Social Enterprise within the Scottish Network

NP You mentioned larger contracts such as the one taken on recently for Glasgow City Council. Are these sort of contracts a common occurrence for the enterprise? How was the social enterprise able to procure bigger projects such as this one?

CRNS is a national membership body for community reuse and recycling. They are responsible for the representation of the sector to a wide range of stakeholders including the Scottish Government. Its role is the growth of the community resources sector along with supporting and representing its members.

A Over time we have managed to increase contracts coming from public bodies as the government and council have been becoming more supportive of social enterprises in general. The specific contract was achieved through our close collaboration with CRNS. The charity body was approached by Glasgow City Council with the contract and as our capabilities matched their requirements CRNS directly referred them to us.

Previously we had managed to get a contract with LTL (Learning through Landscapes) a national school initiative to encourage students to learn about planting. What the initiative required was the production of a large amount of planters for the schools. As a charitable body funded by the state one of their stipulations for the procurement process was the requirement for materials used to be part of the circular economy. As a result of that we were eventually put in contact with the initiative to provide them with planters made out of our reclaimed scaffolding boards. I would say that the use of salvaged materials has become increasingly important to such organisations.

NP That seems to be quite an interesting approach towards achieving a circular economy that is not present in many other nations. Where do you feel this need for large government funded organisations to be a part of the circular economy comes from?

A The government has definitely been a big contributor to that. There is a growing public incentive at the moment that is beginning to push private and public bodies to be a part of the circular economy. The circular economy strategy that the government has published actually seems quite impressive. If it makes sense financially I don't see a reason why it would not be beneficial for everyone involved. By working here I seem to be playing my part in this. Completely by accident!

Total = 1527
Charity = 943
Private = 533
Social Enterprise = 51

Chart indicating the presence of charity/social enterprises operating in the reuse sector in Scotland. 66 percent of organisations involved in reuse are operating under a charity / social enterprise banner.

**SCOTLAND'S
SOCIAL ENTERPRISE
STRATEGY**

2016-26



Scottish Government,
Edinburgh 2016



Scotland's Social Enterprise Strategy was an official document released in 2016, further instigating the importance of social enterprises within the Scottish Economy and how to assist their sector to grow.

“... there are opportunities to continue to develop innovative business models that contribute to a more circular economy”

Scotland's SE Strategy 2016–2026

Reclaimed barrels located outside GWR workshop. As part of a program funded from by Zero Waste Scotland.



Main Entrance to newly acquired storage/showroom of GWR on the second bay of the industrial complex.



Newly acquired storage/showroom of GWR. Collected church pew from one of GWR material collection services sitting at the back of the warehouse awaiting deconstruction



Expansion Plans

As we begin exiting the workshop I am directed to an external storage area where some barrels seem to be backed onto the workshop's external walls.

- A** We also get reclaimed barrels from whisky companies and we try and design items like fences so that clients end up buying them.

We got funded by Zero Waste Scotland to reuse the barrels so we try to create furniture from it in order to generate more value.

Closing the tour of the workshop Alex slowly begins directing me to a larger brick building located just off the river's bank. Inside he mentions it is a relatively recent acquisition of further space for the storage and showroom of the salvaged materials.

- A** The big warehouse is a storage and retail area. This would now be where we welcome the general public. The property was acquired last year as we were running out of space.

The enterprise has expanded in the last few years quite significantly so we needed more space.

Until a few years ago all the reclaimed boards were sitting out in the open. They were sold so quickly so we managed but now we are able to keep them more secure. With the new warehouse we can keep the boards protected, now we just need to make sure that we get a constant supply of the boards to keep it full.

Reaching Out

- NP** **I get the feeling that social enterprises like yourself have a prominent position in the circular economy of Scotland. How did that position come to be so prevalent?**

- A** I feel that that's the case. The social enterprise tries to remain as close as possible to governmental and industry networks. Whether that is networks relating to the third sector or networks relating to sustainability. As an example, we join some of the bigger exhibitions/meetings for environmental issues and we also do some tours to get the name of the company out there (open day events etc).

Zero Waste Scotland: Not-for-profit environmental organisation funded by the state and the ERDU. Using evidence and insight, to inform policy, and motivate individuals and businesses to embrace the environmental, economic, and social benefits of a circular economy.

“Traditionally the third sector is looking for support with standards, to make sure that they are working legally and trading correctly, whereas the private sector just tends to do what they do...

We don't really work with salvage yards, we don't know of them, we are not engaged with them.”

Extract from REVOLVE Interview

(Right) Revolve certification badge banner displayed on the premises exterior confirming quality of service and product.



What is Revolve?

Revolve is a quality standard for second-hand stores in Scotland and is awarded to stores that meet high standards in safety, cleanliness and service, giving shoppers that extra reassurance to shop second-hand first.

Revolve certification badge certifying quality of service and product.

- A** We try to stay in touch with CRNS and other networking bodies so that we stay informed on decisions that are affecting our operating and trading activities. Such organisations often help in the procurement of work as their purpose is to enhance the role of community enterprises operating in the resource reuse sector.

Further connections to assisting organisations are always attempted. The Revolve certification is one of them. The certificate is part of Zero Waste Scotland's strategy in promoting re-use. It's a form of brand recognition strategy that allows companies to offer some form of guarantee for the products. Lots of businesses want to achieve the certification but the reality is that it is something that is difficult to get. That certification then puts you on a directory that makes you easily contactable when a client is seeking relevant services.







175

Used material market, Casablanca.

Life and rules in an informal reclaimed material market

J. May Slaoui in conversation with Yassine, Owner of Arch 36

“It would be impossible for me to work anywhere else but in this market. I am accustomed to it now, the noises, its sounds and smells. All you can see, is what fuels me.”
– Yassine



Arch 35



Arch 36



Arch 37



Arch 38



Arch 39



Arch 40

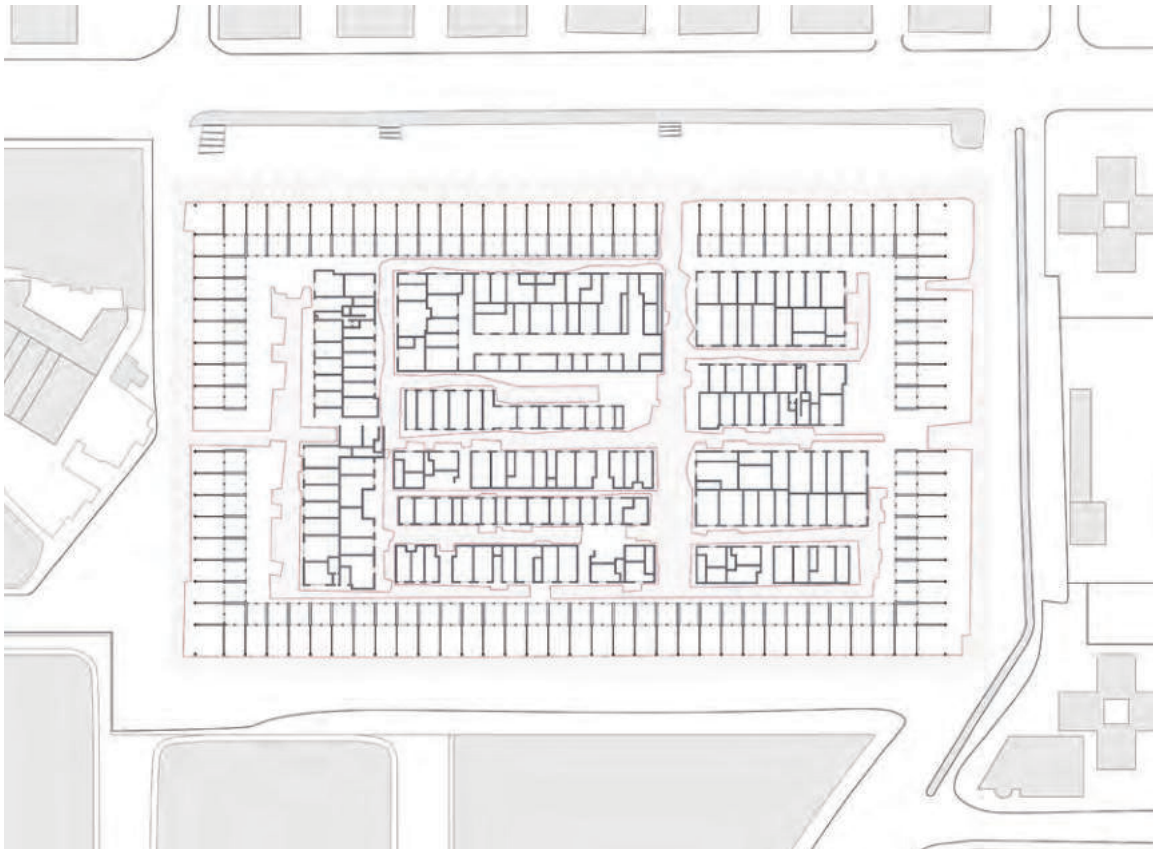
Yassine is a carpenter, he owns one arch at the Souk Ould Mina of Hay Hassani in the centre of Casablanca. This market is a patrimony of the city left by the French, and was constructed between 1920 and 1930. While its inner parts resembles a daily market with fresh fruits, vegetables and spices, its facade is fully dedicated to the exposition of the reclaimed materials of the city. Resellers from around the Kingdom come to this area to buy materials which they will resell in other cities or villages. Rare are the dealers that received education or training material re-use but the sense of belonging and the strong community allowed a recognition of these masters and the generations of knowledge that they represent.

Working independently, each reseller offers a wide range of used materials: doors, windows, stairs, marble, sanitary, wood, metal, chairs, glass and furnitures. Transport, cleaning, repairs, re-purpose, restorations, dismantling are generally services that can all be found, but will depend on the reseller and what he offers. About 2/3 of dealers have a workshop inside the arch to provide works on the materials, such as cleaning, cutting, repairs, dismantling, and re-purposing.

The largest part of the materials have been provided by construction surplus which is sold, or by demolitions in which they will salvage the materials themselves and buy them for a lower price, therefore the quality is quite high. Some dealers also offer a mix between new and old materials. Private individuals come to buy materials for their homes, but also national resellers buy in bulk to later sell them in other parts of the kingdom. Ould Mina Souk is also like a hub in Morocco for reclaimed construction materials and furnitures. Working with two other people, Yassine provides the transport, cleaning, repairing and re-purposing of their materials .

I met with him in the Souk, where he shared with me his vision of reclaimed materials, the life around the market, people who inhabit it and its customers. He asked me to leave his last name and photos confidential as craftsmen and resellers of the souk work on the edge of legality. They do not receive any subsidies from the state and their status appears as a legal vacuum.

Interview conducted in Souk Ould Mina
15 October, 2020



Ground floor plan of the Souk Ould Mina, and its close surroundings.



Materials exposed in the street and left at night.

Monologue

I spent an afternoon with Yassine, and recorded our conversation while he was taking me around the market where he grew up. Here is an insight to his job, daily life in his neighborhood, his relationship to the materials he works with and his clients.

Yassine specialized mainly in doors and windows. He provides his expertise on their cleaning, repairing, re-purposing as well as their rehabilitation. As these elements take up most of the space he owns, he creates every day a nomadic workshop on the street, in front of this arch.

'to keep the money in between us'
In Morocco, souks represent a regroupment of similar resellers (reclaimed materials, fabrics, electronics etc) who centralize a certain activity. Therefore, they generate their own economy in a way.

Yassine Souk Ould Mina is very known in Morocco, as it is the largest and has the greatest craftsmen. People from all over the kingdom come this particular site as our materials here are the same or better than the new imported ones.

My name is Yassine, I am 28 years old and it has been 8 years that I am working in the market. I have learned everything I know about reclaimed materials from my father. The market itself is the greatest teacher. The souk is large and we all learn from each other. You can find anything here! I am originally a carpenter and I also love to work with metal, with two other men that work with me.

I inherited the shop from my dad when he passed away, I kept his two employees, which are both carpenter masters and I consider that the three of us own it. We are a big family. So I really kept the system as it was. We don't do any contracts here, neither when buying or selling materials, nor with our employees. So I could not tell you anything about the laws or legislations around reclaimed materials in Morocco. But every system or organization in this country has a large informal or even illegal part to it, that's just how it is.

The Souk of Ould Mina works quite similarly to any other market in the country, as we have our specificities. Here it's reclaimed construction materials, but in other it could be fabrics, new woods, arts and crafts etc. The idea of having clusters of similar shops is to keep the money in between us and of course we inherited these markets from our ancestors and the French.

We all have more or less similar incomes, we exchange our materials, clients, knowledge and techniques. There even is a 'Souk boss' that is here to fix issues between us.



Flow of reclaimed materials in Casablanca, Morocco. Materials travel from different parts of the city to meet in the Souks. From there, they are spread nationally and in new developing neighborhoods of Casablanca.

Yassine Even though it has been quite a hard few months and still is because of the very long lockdown and the economic situation of the country, I am still optimistic and not too worried. Because the constructions and demolitions will never stop and actually quite the opposite.

“There authorities are blocked, because it would be very risky to start adding taxes or legislations, it could really create a revolution!”
from a conversation with Hakim Cherradi, ex secretary of the ministry of environment.

Just in Casablanca, during 2020, we saw complete neighborhoods rising and other slums being totally leveled. The high end buildings and villas, which are quite common in Casablanca, would very rarely buy reclaimed materials. I think they believe it's a lower quality or want to look like Europeans with shining brand new materials. But I will never lose my costumers, which are the working class of Morocco, or the less fortunate. I mean you can call them whoever you want but there are the largest part of our society, they are the ones who buy most of our materials.

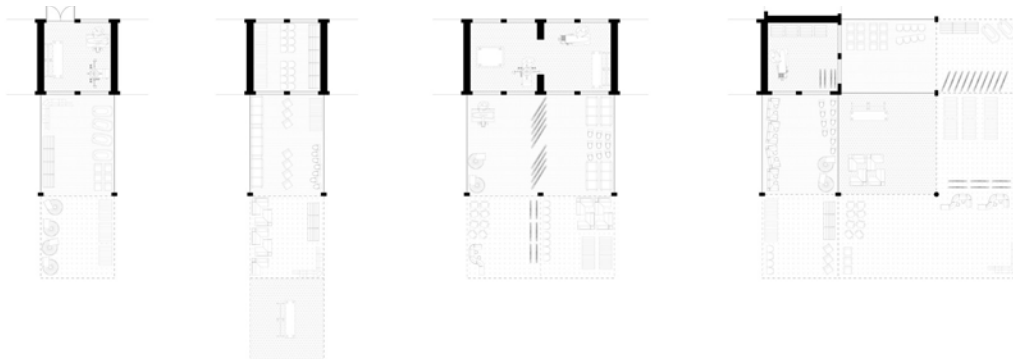
Of course I am also sensitive to the questions of environment, but I am mostly sensitive towards our economical situation. I need to pay my materials, employees and keep a little bit for my family and I. And it's the same for our customers, they have priorities. So when they come here it is not with an optic of saving the planet, but rather reduce their expenses and try to improve their life conditions.

It is not rare to have people adapt their house to the materials and elements they will buy here. Me and my team have been to small DIY houses where the door hole has been shrunk to accommodate the door we sold them. I would also say that our location in the city is very important for our business. The fact of having a cluster of many vendors creates a meeting spot, an address that people know.

Some people just walk through, regardless of the souk and then might end up buying materials. We call it a 'daily souk' as people can buy their vegetables or clothes but also reclaimed construction materials and furniture.



Plan of the Souks of Casablanca, each having its specificity (reclaimed materials, electronics, fabrics, spices etc). These markets are part of the daily life of Moroccans.



Floor plans of the different typologies of shops found in the Souk of Ould Mina. Alternating between shop, workshop, space to expose. Resellers taking parts of the streets to spread their activity.

Yassine The souk is commercial but is surrounded by residential buildings, the mosque and a public square. And at night when we pack everything, the market is invaded by the residents, and their kids play here.

We even leave our materials laying outside during the nights and weekends. As there are night guardians that know all of our stocks, and more importantly how our society works.

In the area of Hay Hassani, we all know each other, old and young, poor and rich, workers or unemployed. So culturally, so as not to put your family in shame, rare are people attempting to steal from us when we are away. Even for you, when you arrived to the market to record and interview us, we knew you were not from this area.

Anytime, during the day or night, the souk is full. And most people will always find what they were looking for and more. It is not just an ordinary Souk, it really is part of the city, in the streets of Casablanca. People going to work pass through it. It really is in the center of Hay Hassani.

We work outside all day, so we really feel free to do other things in the city. We all help each other here so I don't have to worry about anything.

I am always looking forward for new things. Every day we have new materials, new people come to buy or sell, it's always changing. It is my luck that I inherited this place. How many people today can actually say that they enjoy their jobs? I am one of them, I love to repair and clean what others would have just thrown away like garbage. We give elements and materials a second or third life and a new family.

It would be impossible for me to work anywhere else but in this market. I am accustomed and used to this market now, the noises, its sounds and smells. All you can see, is what fuels me.





HH3903

2
Safe Working Load

MADE IN USA

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Scrapyard, Hong Kong

Relevance of Reuse on an Island

Phillip Tsang in conversation with Florence Tang

Starting from Firewood

Self-sustainability

Cutting the Land

Stacking and Shuffling

The Logistics

An Outsider

“Hong Kong simply lacks the knowledge and culture of preserving material for reuse. You can clearly see the government hasn’t put any effort into promoting any kind of reuse.”



Florence Tang, Owner of Dorfield

There are many limitations to the reuse sector in Hong Kong, most of them having to do with the availability of land: the mountainous terrain, the dense population, the fact the centre is located that on a small island. As a result, construction, demolition, and waste management have all been designed to the utmost efficient practices to cut down as much demand for land, time, labour and money as possible.

Despite the fact that waste management has always been well planned and monitored, and that recycling has been hugely encouraged, the possibility of reuse has rarely been identified in the flow of construction and demolition waste in Hong Kong. After speaking to many building industry insiders, most do not have any knowledge of architectural material reuse, nor do they have a complete understanding of the difference between reusing and recycling.

Until now, the practice of material reuse has been so limited, it could hardly be called a business in Hong Kong. Nevertheless, small evidence of reuse, primarily of equipment and tools on construction and demolition sites, could be found. Very few companies in Hong Kong deal with such field, Dorfield Limited is an example. Their yard is located in Yuen Long, western New Territory, most of the area remains low-rise, whereas 90 percent of the land is owned and controlled by the traditional village alliances, instead of the government, high-rise could only be found in the city centre. Dorfield does not only trade reusable materials, but also the ones that are recyclable, scrap or brand new. The interview reveals the kind of the work that Florence Tang and her team do at the yard, and regardless the devotion they put into the work for reuse, there are multiple immovable challenges coming from the environment, the government or the very nature of scarce land of a rather small island. Perhaps, this interview could shine a light on the reasons why reuse has been insignificant in Hong Kong.

Interview conducted at Dorfield Limited, Yuen Long
15 November, 2020



(Left) Workers delivering firewood on Granville Road in Hong Kong in 1950. Clarence Morang Photography

Material unloading area at the entrance of Dorfield, consisting of an industrial ground balance, to measure weight and calculate how much to charge for various materials. It is also where workers manually dismantle huge items of waste, like a billboard.

FIREWOOD PRICES

Macao Ban Causing Hardships

Firewood, which over 95 per cent. of Hongkong's population use as their principal fuel, has jumped up considerably in price due to primarily to the war and secondarily to a recent ban on its export by the Portuguese authorities in Macao.

Some time ago the Portuguese officials, with a view to protecting residents from profiteering by the firewood merchants because of the serious influx of refugees into Macao, fixed the price of imported firewood at \$1.25 (Canton silver money) per 100 catties, or one picul. The Macao authorities have also prohibited firewood leaving Macao for Hongkong and the passage of junk carrying firewood to Hongkong.

Firewood in Hong Kong

Starting from the 1930s in Hong Kong, firewood was used in most kitchens for cooking as well as for general heating at home. According to the Hong Kong Telegraph, in 1938, firewood was the source of fuel in over 95% of homes in Hong Kong. Dorfield saw the opportunity and started their business by collecting and selling used firewood. However, the use of firewood slowly faded away towards the 1990s, with the advancement of coal, gas and other types of fuel.

Starting from Firewood

- PT** Maybe you could start by explaining the type of material reuse that your company provides? As I could see out in the yard, there is a huge range of them.
- FT** Perhaps I could start by giving some background of the company. My father saw the opportunity of reusing wood and started the company in 1968, collecting any kind of used wood, and they could be from construction sites, home or any kind of dumping areas. He would shred them into the right size and sold them as firewood. We created our family business solely on selling used wood as firewood. I helped out a bit when I was young.

Then the use of firewood slowly disappeared and that is when we had to start expanding our business to other materials as well, but still focusing on reuse; our family, especially my father, strongly believes in the value of reuse, not only in architectural materials but all kind of things. Right now, approximately 80 percent of the storage of the yard belongs to wood and the rest for others.

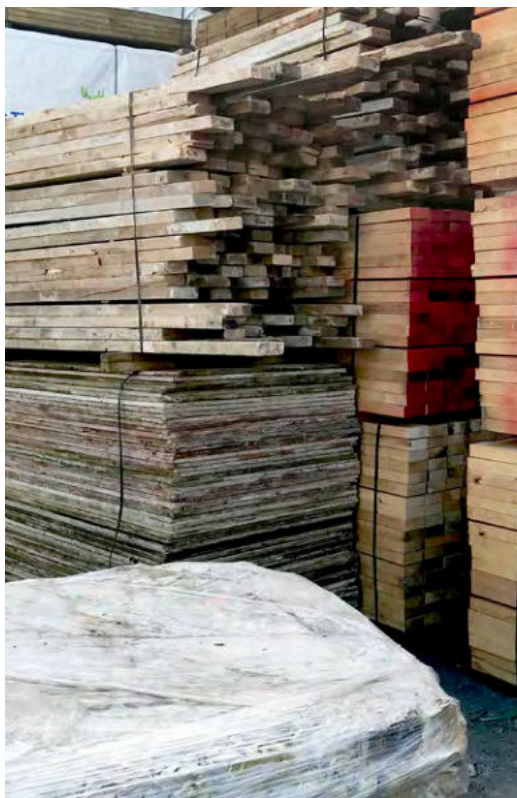
- PT** What are the other materials that you expanded to?
- FT** We don't put a limit on the materials that we salvage from construction sites now, some can be scrap, a lot of them are metal, but we try to take as much reusable materials as we can.
- PT** Is wood still a focus for your business?
- FT** We do try to salvage as much wood as we can, but you can tell from the yard outside that there is a limit to what kind and how much wood we can salvage from each construction site. You should also keep in mind that the use of wood has been slowly declining, the application of wood on construction sites is mostly limited to concrete formwork.

There is also the problem of storage. It is easy for ants to infest our yard, and actually there has been a couple times where we had to throw away all our wooden materials, both new and old because of ants infestation.

- PT** Are there ways to prevent it?
- FT** We can only do thorough checks after materials are unloaded in our yard, it is hard to avoid, at the end of the day they are insects, they are everywhere. We have to keep an eye on them.



Random placement 1: A batch of used hollow steel bars and wooden planks hidden in a corner of new wood stock.



Random placement 2: Another batch of used wooden planks and panels once used for concrete formwork, near the entrance, with new wood stock and a rather large cling film covered cube of squashed aluminum cans.

PT To my knowledge, construction material reuse has been very rare in Hong Kong. Do you face many difficulties with the business?

FT Not for our second-hand wood. We constantly have wooden boards and panels that we salvage from different construction sites, the process is simple for them, taking the wooden panels down without damage is easy for the construction workers.

PT Are most construction companies happy to provide you guys with used wood?

FT Most of them do have a conscience about the environment these days, we do have a list of small construction or demolition companies that are happy to sell or buy wood from us.

Most companies purchase our used wood for the same purpose of concrete form-work, very rarely would they use them for other structural or building purposes, as the strength and quality has already been weakened.

Self-sustainability

PT Would you say the government is active or vocal about material reuse? Or has it been just a limited practice between private sellers like you and construction companies?

FT They have made policies that are indirectly beneficial to our business. For example, before 2005, the reuse of any material on-site almost never existed in Hong Kong, until the government set up the **Construction Waste Disposal Charging Scheme**, which made it compulsory to pay when waste was dumped at any other waste management facilities. That was a big boost for my business at the time, as I would take in wood for a much lower price, almost 60 percent less than the charging scheme.

PT If it was free to dump everything at the landfill, how did you get your clients before the plan was introduced?

FT Before the scheme was introduced, we would take in materials for free, and we had and still have a long list of construction companies and contractors that we have been doing business with for a long time. Buying and selling used material was only one of many businesses we do.



Construction Waste Disposal Charging Scheme

The scheme was designed in 2005, as an application form to charge C&D waste per tonne dumped into landfills and other waste facilities. It aims to encourage construction companies to carry out on-site sorting, in an attempt to slow down the continuous and urgent issue of overflowing at landfills.



Land ownership in Yuen Long can be tricky. 90 percent of the land in Yuen Long is passed on from ancestors, the family has control over the use and development of the land. However, the government still retains the ownership and can make changes if needed.

Florence's father has the control of the original plot of land. Unfortunately, the erection of the highway, alongside the greenstripes as noise barrier, cut off 2/3 of the original plot. Not only was the land taken away, but also the spaces for the material that could be stored and the profit from it.

Compensation is normally provided in scenarios like that, but it was not mentioned in the interview.



MetsäWood

A division of wood supply under The Metsä Group, which covers the whole wood value chain from sapling to product. They primarily supply laminated veneer lumber, birch and spruce plywood (the latter two are the woods Dorfield regularly orders). Their international sales ranges from Denmark, to Germany, American and China.

FT We do need to invest in other businesses to make sure our company can survive. So we also purchase lots of new wood in very good quality from **MetsäWood**, we have them imported all the way from Finland.

As you could see in our yard, about 20 percent of the place is reserved for storing our new wood stock. We try to maintain or even grow, if ever possible, our reuse business, but it is essential that we have to balance it with new wood supply too.

Cutting the land

PT **Has the government never worked or made direct contact with you guys?**

FT No, they never gave us any incentives or help, considering how rare and niche our business has been in Hong Kong. In fact, the government stripped a large piece of our land in 1996. I remember that very clearly, because we had no say in the decision, they decided to build a new highway, right beside our office right now, and that cut in between our original plot of land before 1996. The Lands Department issued a notice, gave us a year time to clear that part of our land, and stated that it would be taken away by the government for a new construction after a year. At the time we didn't even know what kind of new structure/building is going to be built, that was never mentioned in the notice.

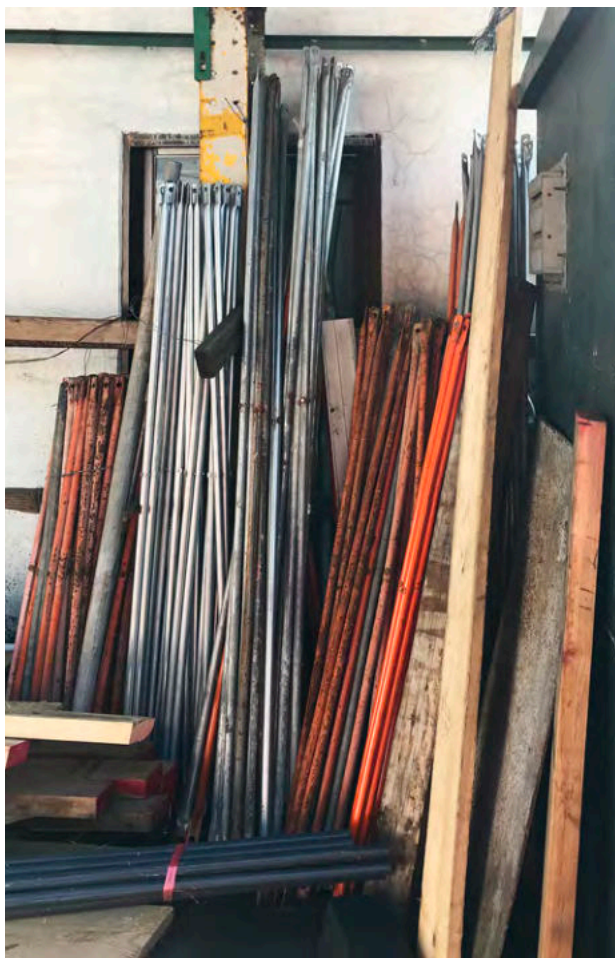
So in my opinion, the government has not shown us any sign of attention or care for our type of businesses or even the idea of reuse, despite the increasing encouragement they have been giving for the recycling of C&D waste.

PT **Since the government has been reluctant to help, do you guys have any other support from outside e.g. green organisations?**

FT We try not to rely on any other companies or people in terms of support, that is why we deal with new materials, so we can have other sources of profit. The fact is that many construction companies prefer new materials over used ones if you provide them with a choice, but I do have some construction companies that have been renting used materials for a long time, but that is only for equipments and tools for construction.



Random placement 3:
Steel floorboards and a
malfunctioned printer
stacked up at the entrance;
right beside a scrap pile,
comprising paper, wires,
copper tubes, wooden
pallets and some plastic
wastes – all recyclable.



Random placement 4: Some
of the new and rusted
steel scaffolding as well as
wooden planks stored at a
roofed corner of the yard.

Stacking and Shuffling

PT How about the metallic materials?

FT Metallic materials are easier to be dealt with. They could be stored for much longer time, you could see some of them are covered with rust, but little rust is acceptable for construction companies; structurally, they are still good to use. Comparing to wood, they are much more durable and more convenient to take in. Normally, we take in any kind of metallic waste, doesn't matter if they could be reused, recycled or thrown away.

PT What is the longest time you would store your metallic waste at your yard? And what do you do when you can't store them?

FT That depends of how much materials we are getting in that period, and how much space we got here in our yard, as you can see, it is very crowded here, sometimes we don't even remember where we have put our materials; we don't have a system to store our used materials, we leave them wherever we see spaces, so that really depends on how much space we have here.

The limit is normally about 10 months and if there is no company that wants to buy them, we sell them to a company that recycles them. Same with the wood. We try to hold on to the material as long as we can, sometimes for longer than 10 months, but we eventually have to get rid of them for the new ones to come in.



**Chung Yue Steel Group
Company Limited**

眾裕鋼鐵集團有限公司

They run a 10,000 square meters that includes a scrap yard to store all the metal waste collected from households, construction sites and material dealers like Dorfield. Well equipped with machines for shearing and shredding before the metal get sent to China for melting. In 2020, they processed 10,000-20,000 million ton steel scrap per month.

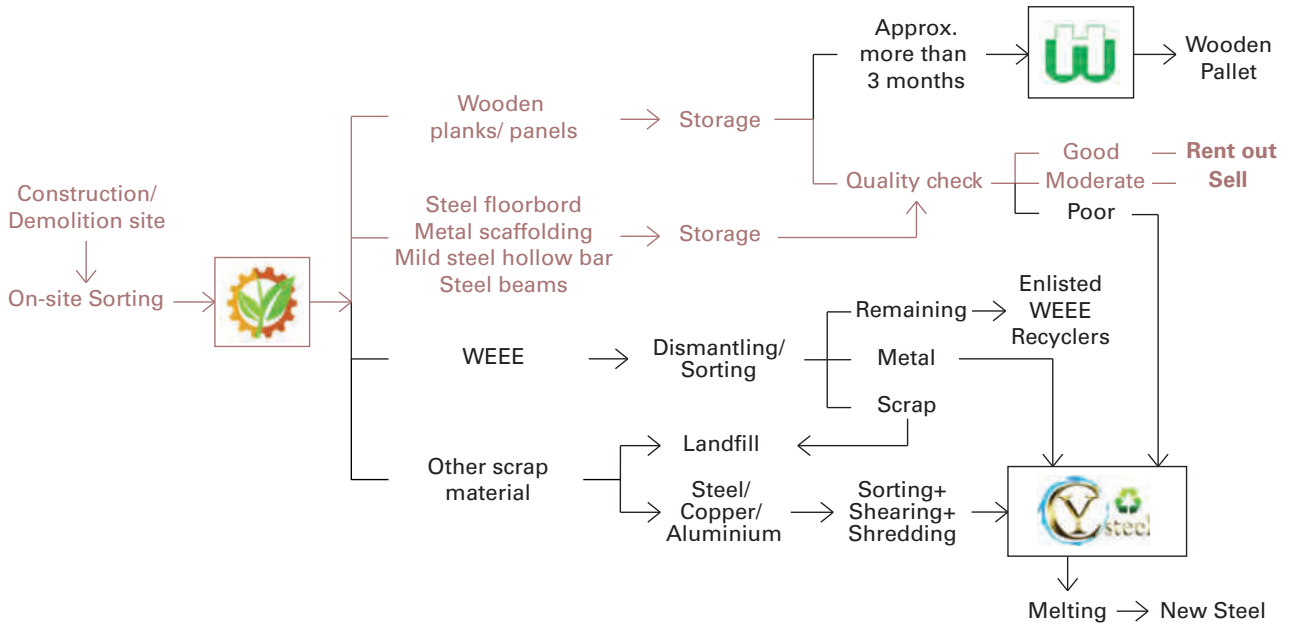
PT Shorter storage time for wood?

FT Yes, much shorter, maybe about 2–3 months, we don't actually have a limit, it depends on the quality of the wood, they normally get sold pretty quickly as well, so it is not something we always have to worry about.

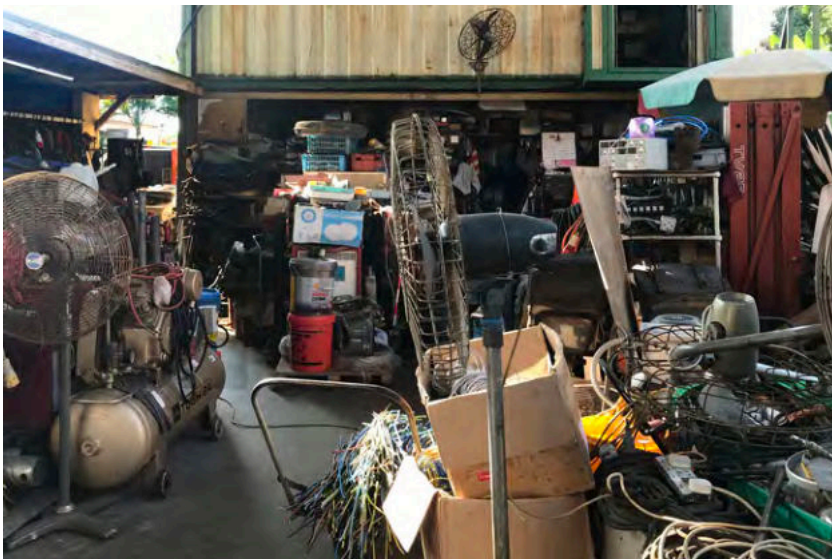
The Logistics

PT What would you do with the non-reusable metallic waste?

FT We work with a company called **Chung Yue**. They are very willing to collect our steel bars, all kinds of copper and aluminium, many of those waste are window frames. To my knowledge, they usually ship the materials to China and have them melted to make brand new materials. And we, of course, make money from selling that waste, the money is not a lot but it's better than nothing.



Flow chart of materials at Dorfield. The routes marked in reddish brown represent materials that can be reused. The routes marked in black represent materials that will end up being recycled.



All electronic waste stored in another corner of the yard, some waiting to be dismantled, some to be taken to recycling.



**Hong Kong Hung Wai
Wooden Board Company**
香港鴻偉人造板公司

They specialize in collecting all kinds of waste wood which will then be shredded into small pieces and mixed together to make new wooden pallets. Hung Wai collected 120 tons of waste Christmas tree in 2018, all contributed to the production of wooden pallets. However, they faced a few months of shut down due to insufficient wood intake.

WEEE Recyclers

WEEE stands for Waste Electrical and Electronic Equipment. As part of the Producer Responsibility Scheme (PRS), the government set up a list of regulated recyclers in 2018 that take in electrical and electronic waste, which include air-conditioners, refrigerators, washing machines, televisions, computers, printers, scanners and monitors.

PT And how about the wood? Where would that go when they can no longer be stored?

FT We have another recycling company that collects wood waste. They normally have those wood recycled into wooden pellets.

PT Out of all the materials that are stored at the yard, do a lot of them end up being recycled?

FT Again, that depends on the amount of space that we have here. Normally we try to rent out as much material as we can, as long as the quality and strength is good enough, for example the floorboards are normally rented out for a longer period, and can be reused for multiple times. Sometimes we sell the slightly weaker materials at very low price to clear them off our yard. And when spaces are emptied out, we have new materials come in, so we have to manage the logistics of the in and out of material to avoid sending them to recycling, when we clearly know that they are still good enough to be reused.

The ones that usually end up recycled are the extremely damaged materials, which are not reusable. We have a huge container out at the entrance to store all the non-reusable metallic waste. Once it gets filled, maybe once every month, they get driven to the recycling company.

PT How about the materials that cannot be reused or recycled?

FT There is a very small amount of material that cannot be reused or recycled, and we are talking about a boxful only, and those unfortunately we have to be taken to the landfill. But we try to dismantle every waste and take out the parts that can be recycled. For example, we will break down some of the scrap electronic machines, take out the screws and cables, which are then grouped together with the same type of recyclable waste, before taken to the **WEEE recyclers**.

We can make money out of every waste that can be recycled, that's why we search very thoroughly before the waste gets sent to landfills.



An accumulation of reusable metals, including I-beams and pipes, are piled up right next to the entrance.

An Outsider

PT Do you think expansion of your business, especially in material reuse, will be a possibility in the future?

FT It will be very difficult, a lot of the construction companies that we work with are the smaller ones in Hong Kong, the amount of material that they could contribute to our yard is not massive and that is why we have other sectors for our business. I also don't see a lot of new construction companies emerging, we will have to stick with the current ones that we have been working with.

The cooperative construction companies, which there are only a few of in Hong Kong, normally have their own practice of reusing their equipments and tools. Most of them have their own land to store anything, without involving an outsider like us to handle the material and waste for them.

If we do expand, we will focus on the new wood supply, but we don't have a plan for that so far.

PT Looking at other countries like the UK or Belgium, the practice of reuse is much more common, I wonder if you have any idea or suspicion about why the practice is so different and rare in Hong Kong? Do you think it has anything to do with the type of building? Or the type of material for the building?

FT I think it really depends on the culture, Hong Kong simply lacks the knowledge and culture of preserving material for reuse. You can clearly see the government hasn't put any effort into promoting any kind of reuse; I would never count on them for making it a policy either. They would never pay attention to businesses like ours.

PT Would you say that is the situation for the construction industry in general?

FT Yes, there aren't even enough laws and policies to ensure the safety of construction workers, you can still hear news about accidents on construction sites from time to time.



Acknowledgments

200

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Photo (Right)

Reclaimed brick
transportation route to
new development within
Malmö harbour

Malmö, Sweden

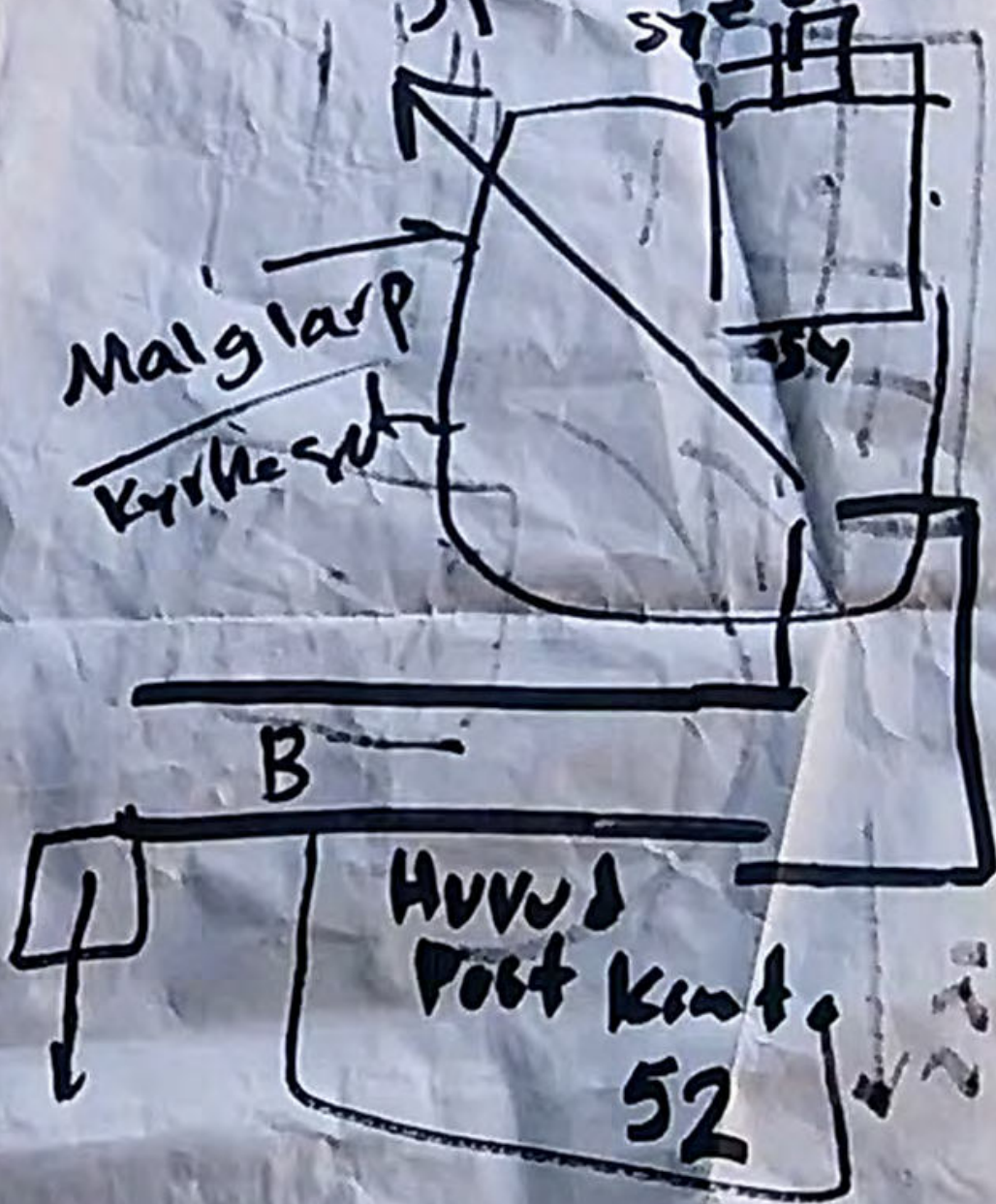
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57

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54

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52





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Photo (Left)

Reclaimed brick in
Clearaway reclamation

Tonbridge, England

