

Plastic Waste Free Islands



Norad

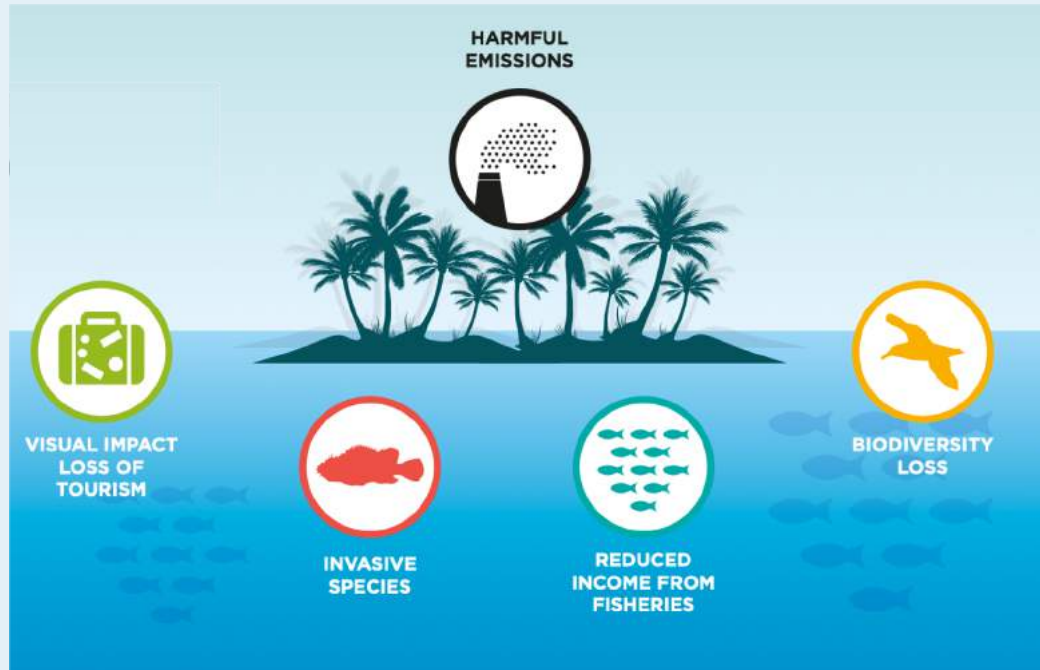


PROOF OF CONCEPT
WASTE-TO-PRODUCT FIJI

An initiative supported by Norad
managed by IUCN and
co-implemented by Searious Business



GENERAL STATUS OVERVIEW & SECTORAL DATA

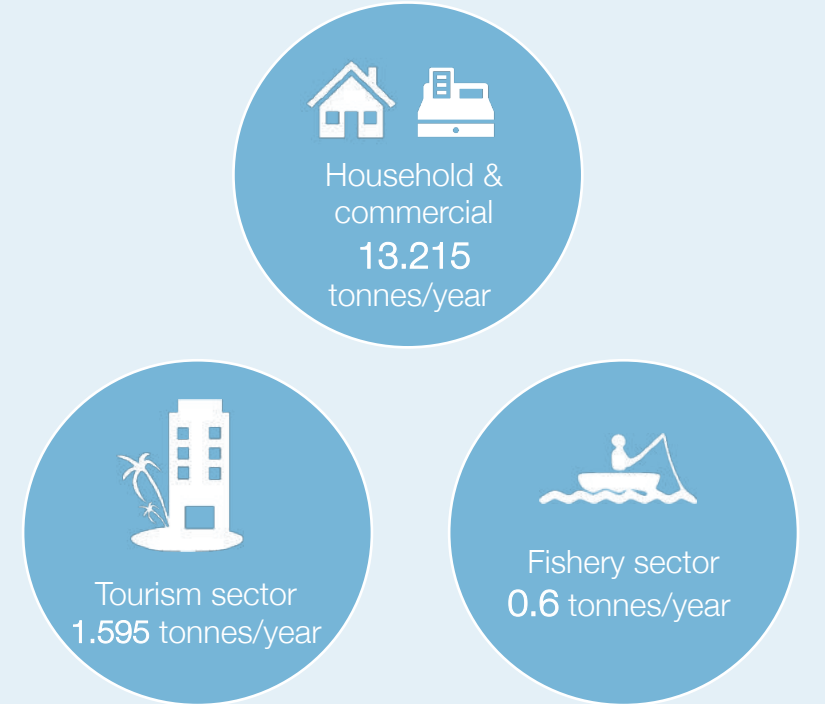


	Annual net Imports 2018-2019 (T/y)	Total disposed 2019 - landfill (T/y)	Total disposed 2019 – dumpsite (T/y)	Total recycled 2019 (T/y)	Leakage (T/y) (95% credible interval)	Leakage Percent (95% credible interval)
PET (1)	2798	1423	962	10.2	442 (0-1711)	15.6% (0-60%)
HDPE (2)	595	288	209	6	98 (0-435)	16.3% (0-72%)
LDPE (4)	2677	1314	900	12	474 (0-1347)	17.6% (0-50%)
PP (5)	1710	799	575	0	340 (0-989)	19.8% (0-58%)
PVC (3)	220	80	77	0	63 (0-170)	28.8% (0-77%)
PS (6)	1675	968	388	0	328 (0-1305)	19.5% (0-77%)
Other (7)	9115	4236	2714	0	2198 (0-5318)	24.0% (0-58%)
Overall	18791	9108	5825	28.20	3944 (255-7807)	20.9% (1%-41%)

National plastic waste generation & leakage data Fiji

GENERAL STATUS OVERVIEW & SECTORAL DATA

- No wide scale source segregation, collection, or segregation at landfill, except for PET bottles
- Key initiatives (250 of 1825t/y PET is collected)
 - Recyclers – i.e. Waste Recyclers Ltd. : 25yrs of PET collection (for export); and local collection & recycling initiatives (CBOs, NGOs)
 - Marina – “Best profit Idea”: yellow bags for unrecyclable waste (\$2/bag). All recyclables- free of charge
 - Bottling companies - plastic pledges (100% recycling, % recycled content) and collection through Mission Pacific: Coca-Cola Amatil (Fiji) Ltd; Natural Water of Viti Limited (Fiji Water); Motibhai Group of Companies (Sprint)
- SPREP/PRIF/JICA/JPRISM – Waste Management investments and CDL/ARF-feasibility study
- Pipeline:
 - Hot wash flake installation for PET
 - Advanced Recovery Fee system policy paper is being developed by PWFI for recyclables, incl PET and possibly HDPE
 - Bottle to Bottle recycling, PWFI-Working Group



14.810 tonnes plastic waste generated/year

Targeted material(s)

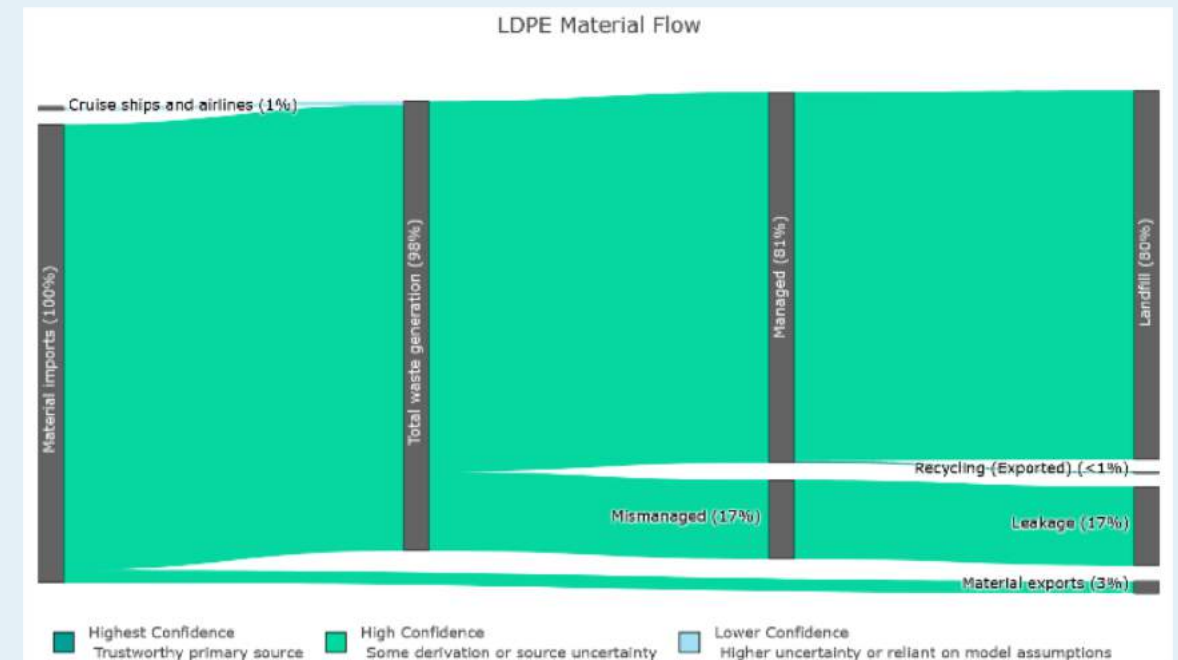
LDPE – CURRENT VALUE CHAIN



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Polymer type	Plastic Item	Household (T/y)	Commercial (T/y)	Tourism (T/y)	Fisheries (T/y)	Total
LDPE 4	soft plastic packaging single use plastics	1258.68	615.94	246.82	0.05	2121.49
LDPE 4	glossy shopping bags single use plastics	20.01	46.65	0.00	0.01	66.67
LDPE 4	food containers ldpe	2.66	0.00	0.00	0.00	2.66
						2190.8

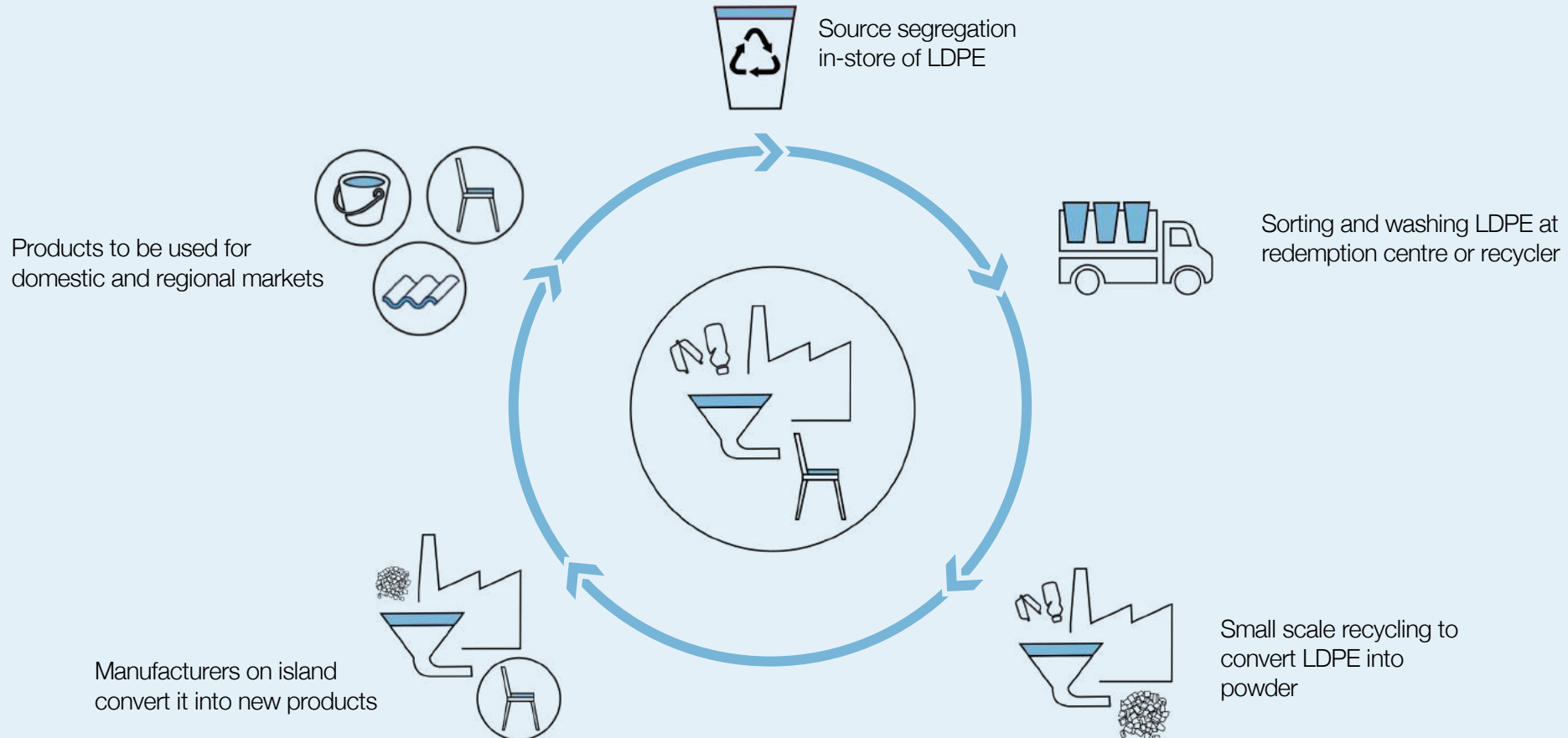


Outline Proof of Concept

ALTERNATIVE VALUE CHAIN



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Outline Waste to Product

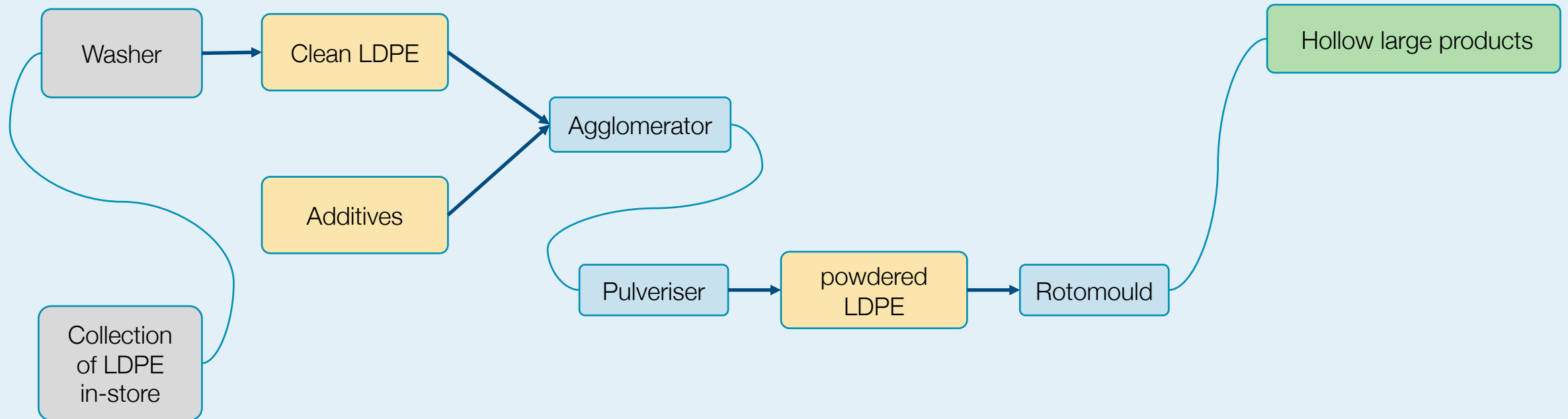
RECYCLING PROCESS



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Concept selection

DECISION FACTORS –WASTE TO PRODUCT



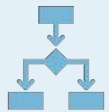
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Impact

- (semi-) Industrial setup and machinery to
 - Convert enough plastic to keep from landfill and ocean leakage
 - Get quality output that can compete with existing products
 - Create durable business
- Creating local employment

Flexibility



- Creating different (mix of) semi-finished and end-products
- Create output material for different markets
- Enables sector-specific contribution to reduce waste
- Being able to convert different plastic inputs and qualities



Viability

- Durable business plan / calculation
- Based on starting from scratch, with fast learning curve
- Fitting the volumes on the island
- Ready for investors to step in
- Scalable: capacity aim 150+ tonnes / year



Complementarity to existing initiatives

- i.e. humanitarian/WASH initiatives like Field Ready
- Learning from what has been done, what works and what doesn't
- Utilizing local recycler's machinery if it fits the setup (Rotomould Fiji)
- Considering local situation and market

Concept Description



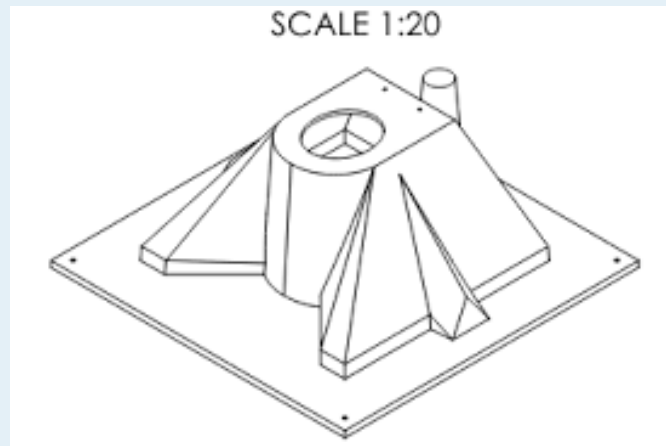
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MIX OF PRODUCTS

- Hollow large product: i.e. water tanks, waste bins, buckets, flower pots
- Prototype: Latrine slab & raiser
 - Dimensions: L1300 x W1400 x H760 mm
 - Weight: 14 kg
 - Intended use: Emergency aid sanitary supplies



Concept Description



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MIX OF PRODUCTS

- Technique: Rotomoulding
- Machines: agglomerator, pulveriser, open flame 'rock and roll' rotomould, Finishing tools
- Types of plastic converted:
 - LDPE sorted & washed (plastic bags)
- Amount of plastics used: e.g. 17 kg per Latrine, 60 kg per 3100L water tank
- Source of input materials: Collection of LDPE (soft plastics), first through supermarkets. When scaling up through source segregation – 1 bag (pre-paid) programme
- Impact: up to 135t/y = 6.1% of total LDPE stream, 1.14% of total plastic generated



Factsheet

MARKET ANALYSIS, COST OVERVIEW, USP



Major applications and markets

- Public: i.e. Waste bins, Latrines, Compost bins, Wheely bins
- Private: i.e. Dog house, buckets
- Tourism: Bucket stool, trip container

Price points and volumes to be sold: see next slide

Cost of production

- Collection: 25 hours / month
- Feedstock preparation: (washing, sorting, shredding) 145 hours / month
- Production: (agglomerating, molding, finishing, assembling) 75 hours / month
- Distribution: 40 hours / month

Unique selling points

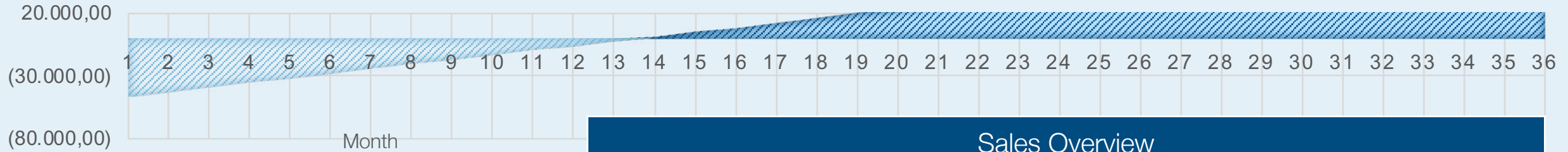
- Producibility: can be applied in existing product molds with less mechanical demands, (no food grade applications:
- Scalability: When improving the quality by additives or mixing with virgin the application can be broadened
- Flexibility: Recycled content can be applied in many products, as long as the mechanical properties are right (If in food grade applications the collection should be from a controlled source)
- Marketability: Circular product
- Risk & compliance: Quality performance, with health and safety compliant setup

Factsheet



FINANCIAL DATA: ROI, SALES DATA

PAYBACK ANALYSIS



Summary	
Money Needed to Start	46,451.56
Months to Pay Back Investment	14
Full Time Employees Needed	8.6
Revenue Earned Per Month	23,345.00
Fixed Costs Per Month	160.00
Material Costs Per Month	16,871.25
Total Wages Paid Per Month	2,620.31
Total Profit Earned Per Month	3,693.44

Sales Overview				
Products & Services	Selling Price Per Unit	Number of Expected Sales Per Month	Total Product Cost	Profit Margin
50 kgs of Pulverised Plastic	0.00	225.0	2.54	-100.00%
Latrine slab & riser	29.00	300.0	23.54	23.18%
Pour flush + Urine Divider	8.50	300.0	7.04	20.69%
Dog house small	85.00	34.0	70.04	21.35%
Wheely bin 120L	58.00	45.0	47.54	22.00%
Compost bin	95.00	30.0	77.54	22.51%
Watertank 3100L	122.50	15.0	100.04	22.45%
Potential new products				
Bucket	7.10	125.0	5.86	21.09%
Plant pot	17.00	60.0	13.72	23.93%




Factsheet

BENEFITS



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Financial benefits 	Environmental benefits 	Social benefits 
ROI – 14 months	Lower landfill pressure for government: 135 tonnes / year waste diverted from landfill/dumping sites, which is 6.1% of LDPE stream	Develop recycling market - Create more jobs in island in collection, sorting, cleaning, recycling – 8.6 FTE when converting 6.1% of LDPE generated
Better license to operate for construction and furniture market. And allows for green/circular public procurement	Approx. 136.35 tonnes of CO2 emissions saved by redirecting plastic waste into products	Contribution to cleaner island and attractiveness for local population and visitors
Customer loyalty for producers	Reduced amount of plastic waste that might leak into the environment. 135 tonnes / year diverted from potential leakage	
Lower waste disposal and clean-up costs for government		

Plastic Waste Free Islands

Let's catch the circular wave together



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<https://www.iucn.org/theme/marine-and-polar/our-work/close-plastic-tap-programme>

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#ClosethePlasticTap



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<https://www.seariousbusiness.com/islands>

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#PlasticWasteFreeIslands #CloseThePlasticTap



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