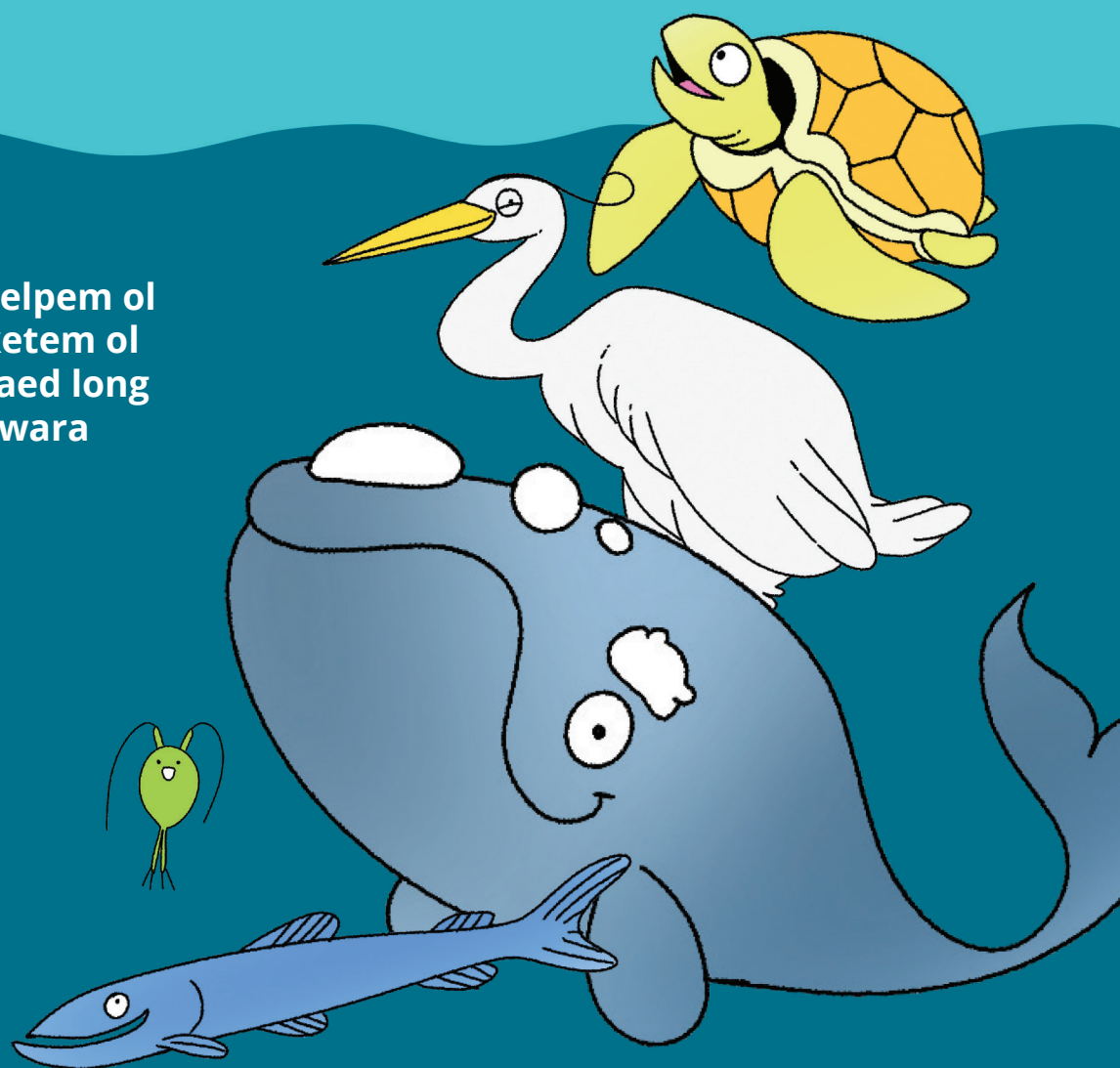


Komyuniti Pak

Level 2
Vanuatu

4 lesen blong elpem ol
tija long eduketem ol
studen long saed long
doti blong solwara



Department
for Environment
Food & Rural Affairs



Centre for Environment
Fisheries & Aquaculture
Science



Funded by
UK Government

PROUD TO SUPPORT



COMMONWEALTH
HEADS OF GOVERNMENT MEETING
LONDON 2018

Lesen 1: Wanem ia doti blong solwara?

Lesen ia emi wan intradaksen long topik blong doti blong solwara mo ol isiu wea doti ia emi mekem long saed long solwara laef.

Doti blong solwara emi wan materioli wea ol human oli mekem, wea emi stap long taem long solwara, wea oli sakem long riva, sanbij mo solwara.

Doti blong solwara emi kasem envaeronmen blong yumi tru ol riva, doti wota, ren, win, mo fishing gear wea oli lus.

Doti blong solwara emi stap long evri animol mo ecosystem wea oli stap long solwara, mo emi mekem trabol long solwara laef.

Fulap taem ol animol blong solwara oli tinse doti ia emi kakae blong olgeta, mekem oli kasem siknes.

Doti save damej ecosystem blong lokol animol mo mekem ol invasive animol oli save ko olbaot.

Plastik doti emi stap olbaot, evri taem. Solwara aksen, win, taed, mo UV oli save brokbrok doti ia long smol pis wea oli talem Mikroplastik.

Ol mikroplastik oli dangerous long solwara laef mo ol human laef semak, from taem man emi kakae fis emi save kakae mikroplastik wea emi stap insaed long fis finis.

Plastik doti oli gat spesel propati wea oli afektem wanem iapen long plastik long solwara.

Ol plastik wea oli evi oli draon long bed blong solwara mo oli fas long botom long solwara, narafala doti emi stap long medel long solwara, ol narafala wea oli smol tumas oli flot antap long solwara.

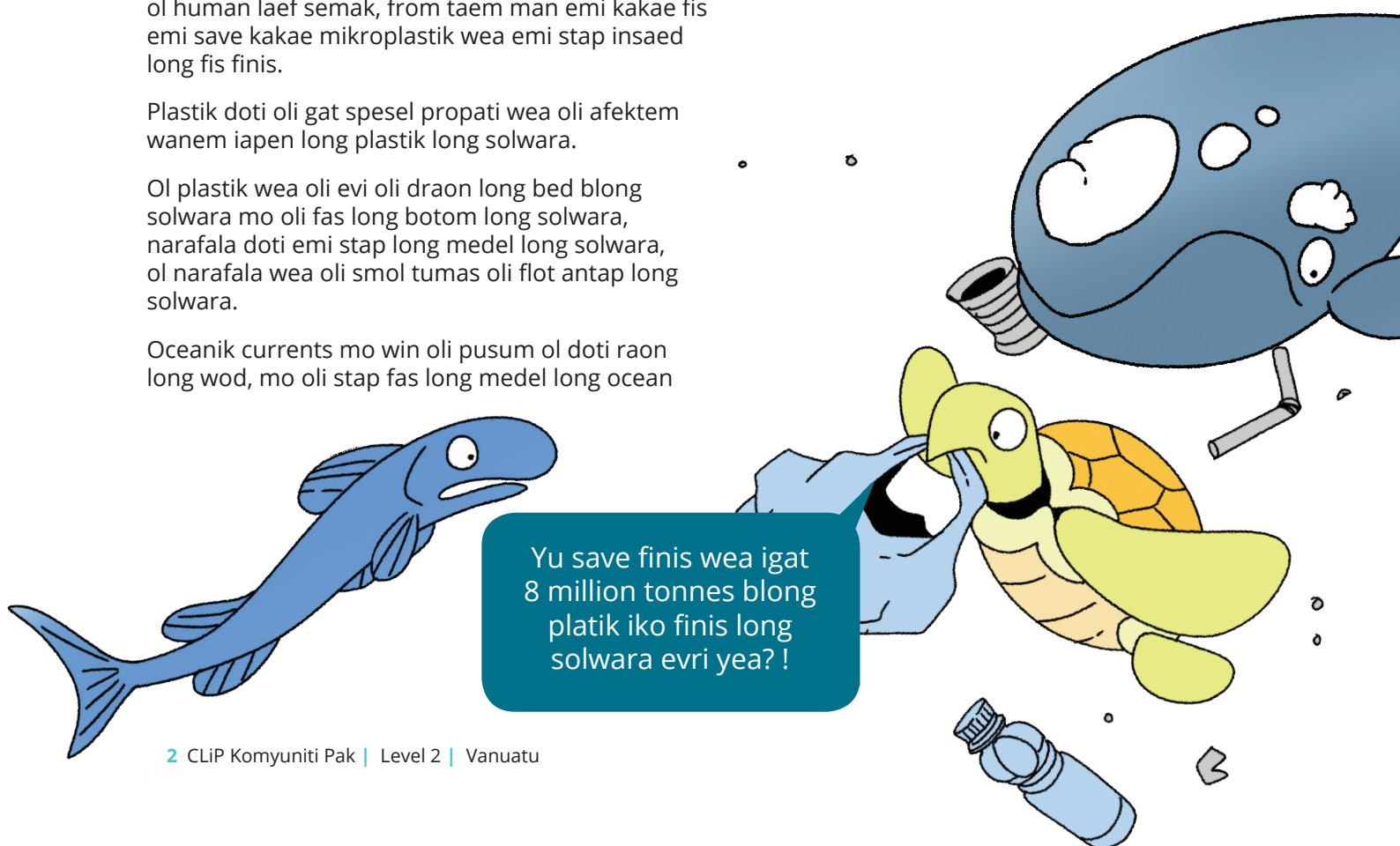
Oceanik currents mo win oli pusum ol doti raon long wod, mo oli stap fas long medel long ocean

mekem bigfala oceanik gyres, oceanik gyre emi olsem wan bigfala amaon blong doti wea oli fasfas tugeta wetem solwara current.

Lesen ia emi talem long studen wanem ia doti blong solwara, olsem wanem doti ia iko long solwara, mo wanem problem doti ia emi mekem long solwara.

Risos

- <https://tangaroablue.org/resources/fact-sheets/category/29-marine-debris-fact-sheets.html>
- [What does Marine Debris Mean for our Oceans- Tangaroa Blue Foundation](#)
- [Ocean Heroes: 5 Gyres - Problem With Plastics](#)



Doti blong solwara Fact sheet

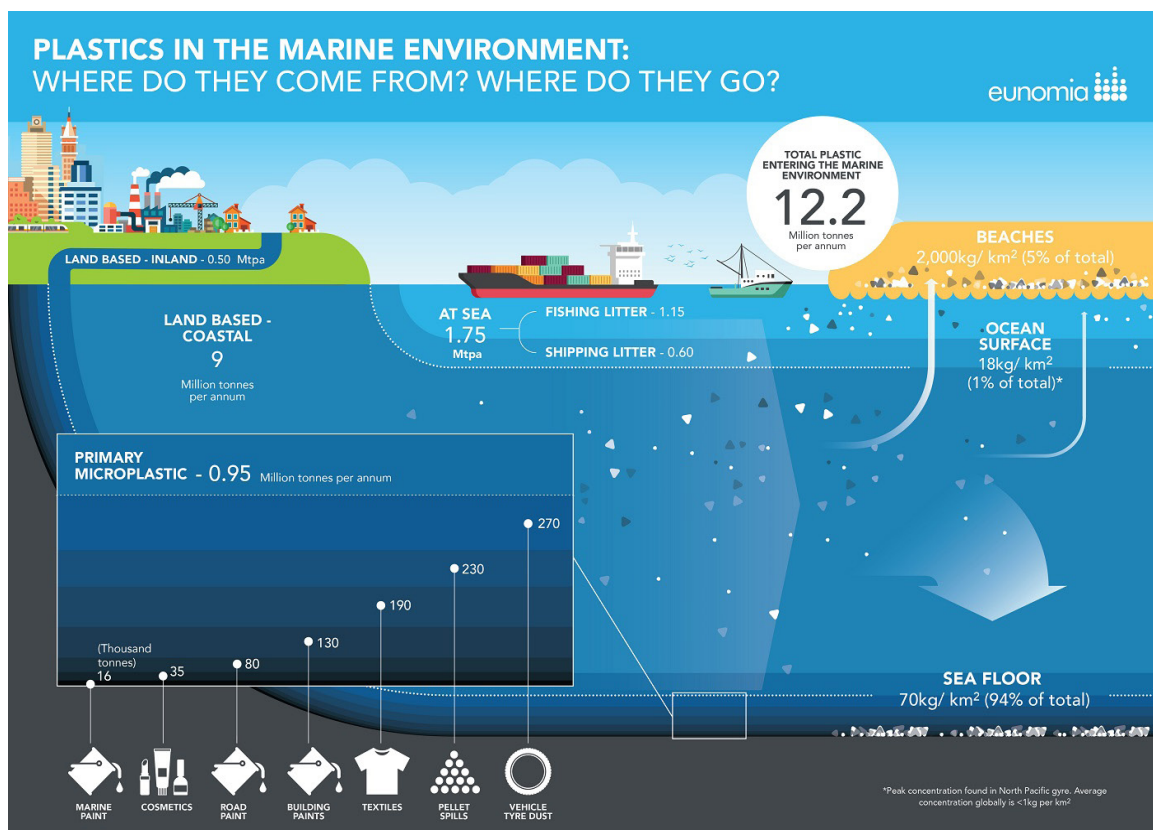
What is marine litter?

Doti blong solwara emi ol doti we ol human oli sakem long solwara, long riva, long sanbij. Emi wan bigfala problem raon long wod, abaot 8 million pis doti oli kasem solwara evridei !!!

1. Plastik emi 80% blong doti blong solwara. Plastik emi wan term wea emi koveremap fulap polymer wea oli save givim difren fom. Plastik botel, takaway bokis, fishing gear oli stap olbaot raon long wod long solwara. Insaed long solwara, UV exposure, wev, win aksen oli brokbrok smol ol pis plastik ia, mekem "mikroplastik" o mo smol : "nanoplastik".
2. Glass emi namba 2 doti blong solwara wea emi stap long sanbij. Glas ia emi kam aot long botel wea oli brok.
3. Aluminium sofdrin tin mo ol narafala item oli stap long sanbij mo long solwara.

Doti blong solwara emi go wea?

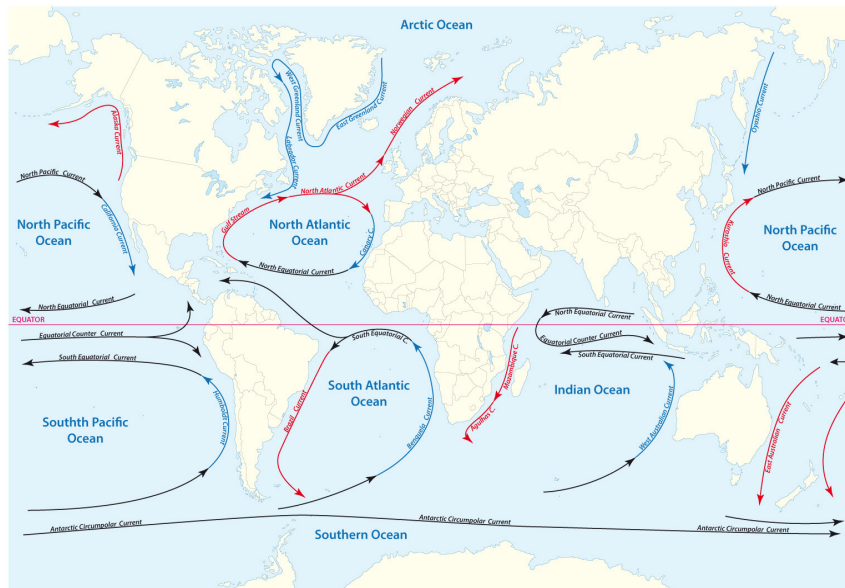
Ol difren item oli gat difren densiti wea emi afektem olsem wanem emi draon o emi flot. Bigfala item oli kasem air fes taem mekem oli flot antap, bae taem iran, mekem item ia emi brok smol. Ol niu data oli talem 94% aot long evri solwara plastik doti oli draon kasem botom blong solwara.



© Eunomia <http://www.eunomia.co.uk/reports-tools/plastics-in-the-marine-environment/>

Doti blong solwara Fact sheet

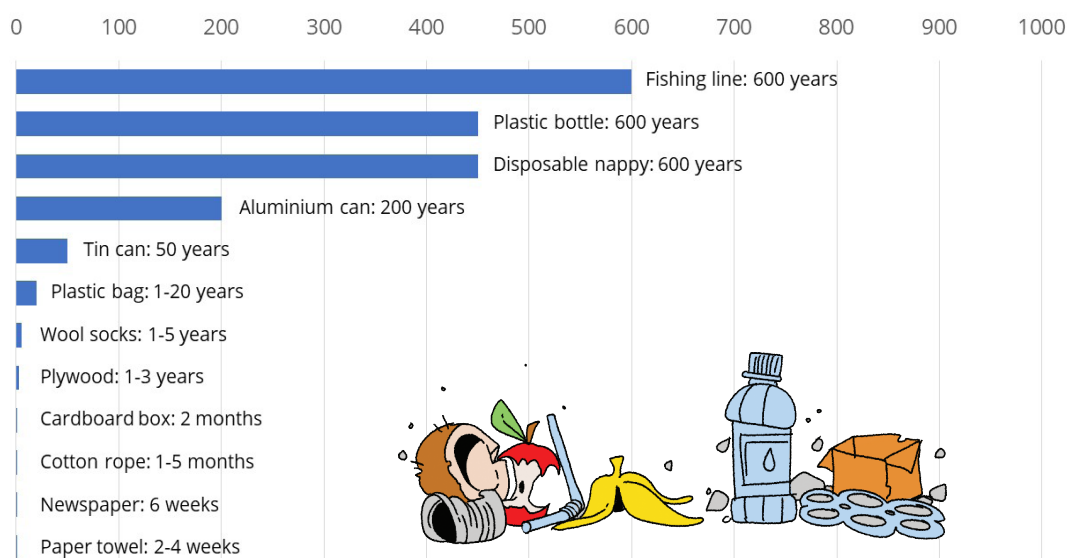
Win, wev mo solwara taed oli muvmuv ol doti olbaot long wod, mo oli sakem doti long evri sanbij. Big oceanik current oli tekem ol doti raon lo wod olsem wan rod. Ol solwara current ia oli fomem 5 oceanik gyre wea ol doti oli stap go tugeta. Mo big oceanik gyre emi Great Pacific Garbage Patch wea oli talem igat 1.8 trillion pis plastik oli stap flot long em!



© Shutterstock

Ao long bifo oli lus finis ?

Ol saentis long aria ia blong doti blong solwara oli tinkse ol item ia oli nidim fulap taem bifo oli lus long solwara. Plastik emi las long taem long solwara, wan wan plastik botel emi save las 400 yea!



Doti blong solwara Fact sheet

Olsem wanem doti blong solwara emi spolem sea laef?

Igat 4 wei :

Animol tinkse doti emi kakae blong em, suppose emi kakae, emi save ded finis. Long Indonesia oli faenem wan whale fis wei emi ded finis long sanbis, insaed long bel blong em oli luk 6kg plastic, mo 100 plastik cap!



© Alamy

Ol animol blong solwara oli save ded long doti plastik ia.



© Shutterstock

Fishing nets mo ol plastik olsem 6 pak tin, oli save kilim ded ol animol blong solwara from oli save kakae doti ia, o stap trap long em. Doti blong solwara emi save mekem damej long aria blong ol animol. Bigfala doti, olsem fishing net, oli save mekem damej long sam aria olsem rif, taem solwara emi kam raf.



© Shutterstock

Doti blong solwara emi save karem "alien" species long niu sanbij, mekem trabol long lokol ecosystem, mo mekem los long boidiversiti long aria. Long Japan, afta wan big etqwek mo tsunami long yea 2011, fulap doti oli go long solwara, naolia, ol doti ia oli kasem USA coastal aria. Fulap doti ia oli karem sea animol olsem mussel, barnacles mo sea squirts ikam long Japan iko long USA.



© Matt Ecklund

Aktiviti- Ol item oli mekem olsem wanem?

Kreatem awareness long difren materioli mo wanem iapen taem ol materioli ia oli ko long solwara (float, draon, brokbok, organik). Askem ol studen blong rikodem oli tintin blong olgeta long wan tabol.

Material:

- Ol difren doti wea oli stap olbaot long skul mo vilij.
- Ol materioli ia ishud soem wan mix blong plastik samtin mo naturol samtin, strong mo sopsop materioli.

Instraksen:

Putum tugeta ol item ia wea oli save go kasem solwara mo askem l studen blong mekem wan tes blong jekem wanem iapen long item ia taem oli go long solwara.

Ol studen oli mas estimatem wanem item isave flot, mo talem aomas taem bifo item ia emi draonem kasem botom blong wota tank ia.

Item description	Estimate- sink or float?	Time taken to reach bottom of tank (seconds)	Describe how the item is affected by water movement

Taem tes ia emi finis, askem ol qwestin ia:

- 1 Wanem doti blong solwara, plastik, wud emi draon o emi flot?
2. Talem wanem item emi draon slo slo, bae emi stap flot long medel long solwara long fulap dei? Studen mas ridim ol infomesen wea oli stap long factsheet mo ol tintin blong olgeta, blong anserem : suppose yu sakem ol doti ia long solwara, oli go wea? Narafala qwestin : doti ia emi kam wea?
- 3.Traem tinkbaot wanem animol blong solwara emi kakae long top blong solwara, mo wanem doti emi save kakae taem emi stap kakae stert kakae blong em? Studen mas talem suppose doti ia emi save mekem trabol long sea laef?
4. Extensen: Miximap wota wea emi stap insaed long tank mo traem luk wanem iapen long doti wea emi flot, emi save flot yet, o emi stat draonem mo ariap?

Olsem wanem investigesen ia emi relatem wetem ocean taed mo ranran?

Lesen 2: Doti blong solwara long

Lesen ia emi save elpem ol studen blong lukluk long doti blong solwara long Pacifik, tija mas tekem ol student long wan fil trip long sanbij blong kolektem doti.

Sanbij klinim emi gud blong elpem ol studen blong lukaotem gud sanbij blong olgeta mo jekem ol doti wea oli stap finis long sandbij blong yumi.

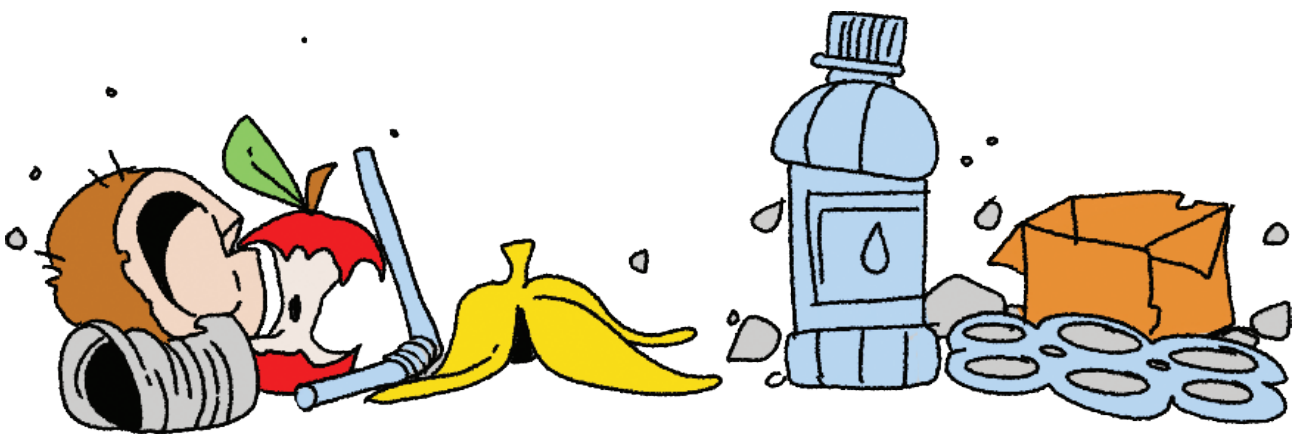
Ol studen oli save elpem blong rimuvum ol doti aot long sanbij, mo rikodem ao mas doti oli faenem, rikod ia i save ko long nasonol mo intanosonol program blong undastanem laef blong doti blong solwara, mo doti emi kam wea.

Igat fulap apps wea yu save daonlodem long mobael fon blong yu blong rikodem ol infomesen ia.

Instraksen blong organesem sanbij klinim.

Risos

- <https://www.mcsuk.org/beachwatch/organisers>
- https://www.ospar.org/ospar-data/10-02e_beachlitter%20guideline_english%20only.pdf
- <https://www.vanuatuconservation.org/litter-survey-for-world-environment-and-world-oceans-days/>



Aktiviti- Sanbij klinim mo exersaes blong sotem aot ol item ia

Gol: tekem ol studen oli go long sanbij blong luk ol doti ia, mo mekem sanbij klinim. Studen oli mas rikodem ol kaen doti oli faenem long wan format wea oli save sendem iko long nasenol program.

Material:

- Sanbij
- Pen, notbuk
- H&S risk assessment

Instraksen:

Selectem sanbij blong mekem wok blong yu, mekem sua blong askem landona bifo yu statem wok blong yu.

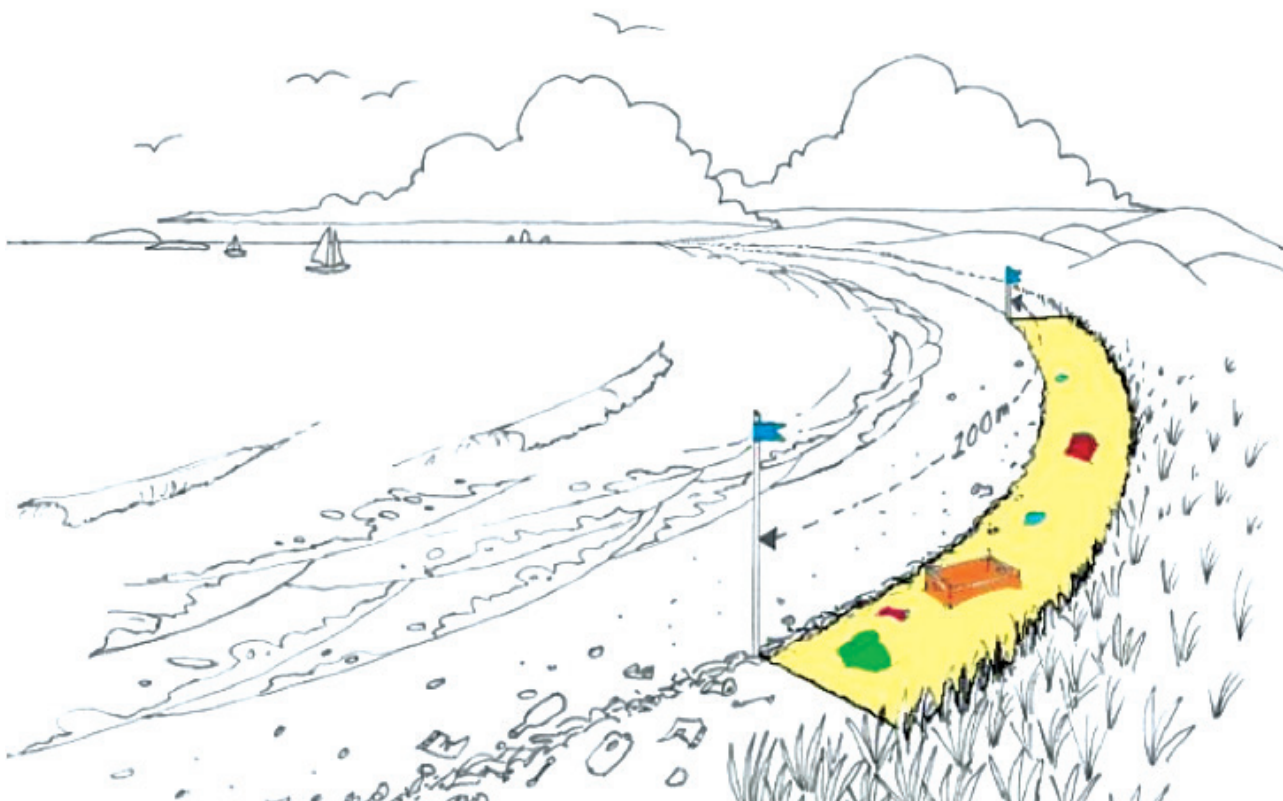
Jekem aoa blong taed mo selektem dei mo aoa abaot 2 aoa o moa afta solwara emi go antap. No ranem woksop ia taem solwara emi kam antap. Iusum taed tabol blong selektem stret dei mo aoa blong woksop.

Taem evriwan istap long sanbij, selektem wan aria blong 100M long. Aria ia emi mas stat antap long sandbij, long ples wea solwara emi kasem taem emi kam soa, kasem aria wea ol flaoa oli gru.

Givim 10 m blong sanbij long evri grup blong studen, askem olgeta blong pikimap eni doti wae oli no dangerous, rekodem evri item long tabol.

Taem woksop i finis, go bak long skul mo rikodem ol risol long tabol blong kaontem ol item wea oli faenem. Mekem wan graf wetem ol infomesen ia.

Talem wanem item emi stap fulap long sanbij ?



OSPAR ID	Items	Tally	OSPAR	Total	weight (kg)	metres
Plastic/Polystyrene						
1	4/6-pack yokes					
2	Bags (e.g. Shopping)					
3	Small plastic bags, e.g., freezer bags					
112	Plastic bag ends					
4	Drinks (bottles, containers and drums)					
5	Cleaner (bottles, containers and drums)					
6	Food containers include. Fast food containers					
7	Cosmetics (bottles & containers e.g. sun lotion, shampoo, shower gel, deodorant)					
	Cosmetics - Pharmaceutical packaging					
8	Engine oil containers and drums <50cm					
9	Engine oil containers and drums >50 cm					
10	Jerry cans (square plastic containers with handle)					
11	Injection gun containers					
12	Other bottles, containers and drums					
13	Crates					
14	Car parts					
15	Caps/lids					
	pumpsray					
	flow restrictor					
	similar					
16	Cigarette lighters					
17	Pens					
	Markers					
	Other plastic stationary					
18	Combs/hairbrushes					
	toothbrush					
	hair ties etc					
19	Crisp/sweet packets and lolly sticks					

OSPAR ID	Items	Tally	Total	weight (kg)	metres
20	Toys & party poppers				
21	Cups				
22	Cutlery/trays/straws				
	plates				
23	Fertiliser/animal feed bags				
24	Mesh vegetable bags				
25	Gloves (typical washing up gloves)				
113	Gloves (industrial/professional gloves)				
	Plastic wrap non food (bubble wrap etc)				
26	Crab/lobster pots				
114	Lobster and fish tags				
27	Octopus pots				
28	Oyster nets or mussel bags including plastic stoppers				
29	Oyster trays (round from oyster cultures)				
30	Plastic sheeting from mussel culture (Tahitians)				
31	Rope (diameter more than 1cm) - Rope less than 1 metre				
32	Rope (diameter more than 1cm) Rope greater than then 1 metre, (estimated length in metres)				
32	String and cord (diameter less than 1cm)				
115	Nets and pieces of net < 50cm				
116	nets and pieces of net > 50cm				
33	Tangled nets/cord/rope and string				
34	Fish boxes				
35	Fishing line (angling)				
36	Light sticks (tube with fluid)				
37	Floats/Buoys				
38	Buckets				
39	Strapping bands - scraps				
	Strapping bands - whole (record as single item)				
40	Industrial packaging, plastic sheeting				
41	Fibre glass				

OSPAR ID	Items	Tally	Total	weight (kg)	metres
42	Hard hats				
43	Shotgun cartridges				
44	Shoes/sandals				
45	Foam sponge - Foam Buoys				
	Foam sponge - Foam cups, food packs and trays				
	Foam sponge - Foam insulation & packing (whole and remnants)				
	Bait & tackle bags & packaging				
	Bait containers & lids, bait savers				
	Recreational fishing items (lure, floats, rods, reels)				
117	Plastic/polystyrene pieces 0-2,5cm				
46	Plastic/polystyrene pieces 2,5cm > <50cm				
47	Plastic/polystyrene pieces > 50cm				
48	Other plastic/polystyrene (please specify in other item box*)				
Rubber					
49	Balloons, including plastic valves, ribbons, strings etc.				
50	boots				
52	tyres and belts				
53	other rubber pieces (please specify in other items box)				
Cloth					
54	Clothing				
	Cloth, hats & towels				
55	Furnishing				
56	Sacking				
57	Shoes (leather)				
	& fabric				
59	Other textiles (please specify in other items box)				
Paper Cardboard					
60	Bags (e.g. Shopping)				
61	Cardboard				
118	Cartons e.g. tetra Pak (milk)				
62	Cartons e.g. tetra Pak (other)				
63	Cigarette packets				

OSPAR ID	Items	Tally	Total	weight (kg)	metres
64	Cigarette butts				
65	Cups				
66	Newspapers & Magazines				
	Brochures				
67	Other paper items (please specify in other items box)				
Wood (machined)					
68	Corks				
69	Pallets				
70	Crates				
71	Crab/lobster pots				
119	Fish boxes				
72	Ice Lolly sticks/chip forks				
	pencils, matches				
73	Paint brushes				
	brooms, brushes				
74	Other wood < 50cm (please specify in other items box)				
75	Other wood > 50cm (please specify in other items box)				
Metal					
76	Aerosol/Spray cans				
77	Bottle caps				
	lids/pull tabs				
78	Drinks cans				
120	Disposable BBQ's				
79	Electric appliances				
80	Fishing weights				
81	Foil wrappers				
	packets/bladders & al foil				
82	Food cans				
83	Industrial scrap				
84	Oil drums				
86	Paint tins				
87	Lobster/crab pots and tops				
	metal fishing items				
88	Wire, wire mesh, barbed wire				
89	Other metal pieces < 50cm (please specify in other items box)				
90	Other metal pieces >50cm (please specify in other items box)				
Glass					

OSPAR ID	Items	Tally	Total	weight (kg)	metres
91	Bottles - Glass beer stubbies & pre-mixed alcohol bottles				
	Bottles - Glass jars & source bottles				
	Bottles - Glass wine, spirit and similar bottles				
92	Light bulbs/tubes				
93	Other glass items				
	Glass & ceramic broken				
Pottery Ceramics					
94	Construction material e.g. tiles				
94	Octopus pots				
96	Other ceramic/pottery items (please specify in other items box)				
Sanitary waste					
97	Condoms				
98	Cotton bud sticks				
99	Sanitary towels/panty liners/backing strips				
100	Tampons and tampon applicators				
101	Toilet fresheners				
102	Other sanitary items (please specify in other items box)				
Medical waste					
103	Containers/tubes				
104	Syringes				
105	Other medical items (swabs/bandaging etc.) (please specify in other items box)				
Faeces					
121	Bagged dog faeces				
Presence of other pollutants					
	Pollutant	Size of pieces or lumps (estimates)	Frequency (estimated number per metre of strandline)		
Paraffin or wax pieces		Size range			
108		0-1cm			
109		1-10cm			
110		>10cm			

OSPAR ID	Items	Tally	Total	weight (kg)	metres
	Oil globules				
	tar balls				

yes

No

Pellets/ nurdles

Special observations (please refer to numbers)

Observed any dead/injured animals/birds

Observed any highly unusual beach conditions

Lesen 3 : Solusen

Lesen ia emi save elpem ol studen blong explore emi solusen blong blokem doti blong solwara, mo soem olgeta olsem wanem ol aksien blong olgeta oli save elpem blong mekem doti ia emi mo smol.

Emi veri impoten blong wok togeta blong mekem smol doti wea emi save ko long solwara. Long fes lesen yumi lanem wanem difrens igat bitwin naturol mo artifisol materioli. Long taem bifo, ol bubu blong yumi oli sakem ol doti blong olgeta long graon, bae doti blong bifo emi lif, mo wud, mo coconas sel nomo. Doti blong bifo emi organik doti wea ikam aot long graon mo go bak long graon taem emi roten finis. Materioli wea yumi iusum naoia, fulap oli plastik, sintetiki, oli las long taem, oli no save roten. Mekemse yumi mas sakem doti ia long rabis bin. Plastik i nidim bitim 1000 yea bifo emi roten!

Ol man oli save mekem 3 moa aksien blong elpem blong mekem amaon blong plastik doti wea emi save go long solwara emi mo smol. Reduce, Re-iusum mo Resaekol. Talem ol studen wanem tintin oli save mekem long Vanuatu blong blokem plastik:

Reduce:

Yu save mekem smol doti taem yu stat iusum ol singol ius item, mo stat use bakegen emi samtin long aos blong yu. Simpol wei blong reduce:

- Tekem wan basket blong ko long maket o mekem shopin blong yu, no pem, no iusum emi plastik bag.
- Tekem botel wota aot long aos blong yu, no pem plastik botel wota
- No iusum plastik stro blong drin, iusum naturol straw : bamboo.

Lusum bakegen :

Yu save iusum bakegen fulap samtin long aos blong yu bifo yu sakem long rabis bin. Trae tinbaot long narafala man wea emi save iusum item ia. Givim emi narafala wei blong iusum ol item ia?

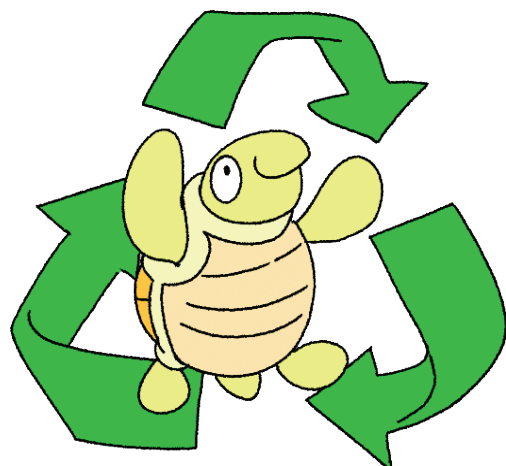
Resaekol:

Yumi save mekem fulap niu difren samtin wetem emi samtin wea emi go long rabis bin.

Jekem wetem ol fren blong yu wanem item yu save sendem iko long resaekol, mo mekem sua blong putum ol samtin ia long spesel ples blong resaekol. No miximap wetem organik doti. Vanuatu emi setemaot niu loa blong banem singol iuse plasti item long yea 2018, igat fulap program blong elpem ol pipol ao blong mekem laef blong em mo isi taem ino gat plastik item. Askem ol studen blong identifiaem ol program ia mo tinkbaot ol difren wei blong elpem ol komuniti blong reduce, re iusum mo resaekol.

Risos

- https://ocean today.noaa.gov/trashtalk_whatcanwedo/
- <https://www.plt.org/educator-tips/reduce-reuse-recycle-lesson-ideas>
- https://www.youtube.com/watch?v=OasbYWF4_S8
- <https://www.youtube.com/watch?v=TjnNOCbuoCA>



Aktiviti: kreatem solusen blong yu blong stopem plastik doti !!

Gol : elpem ol studen blong tinkbaot long difren wei blong stopem plastik doti blong go kasem solwara.

Instraksen:

Openem aktiviti ia wetem wan toktok long saed long niu loa we Vanuatu emi setemaot blong blokem plastik singol iuse item.
<https://environment.gov.vu/images/Waste-awareness-v4-.pdf>.

Askem ol studen blong pikimap plastik doti mo kreatem wan niu loa blong blokem problem blong plastik doti blong kam mo big.

Taem tes ia emi finis, askem ol qwestin ia :

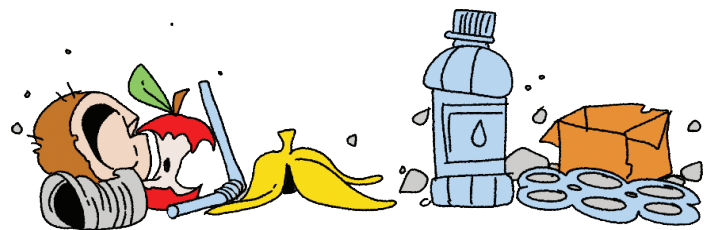
Kreatem 3 lis blong solusen :

Doti blong solwara problem: wanem yumi save mekem wanwan?

Wanem loa emi talem? wanem trabol wan man

emi save fesem suppose emi no folem loa blong yumi? Wanem step yumi save mekem long vilij blong yumi?

Wanem trabol doti ia emi mekem long envaeronment blong yumi? Wanem step gavman em isave mekem?



Wanem yumi save mekem wanwan?	Wanem yumi save mekem long vilij blong yumi?	Wanem gavman emi save mekem long kaontri blong yumi?

Lesen 4: Wanem problem ikat raon long wod long saed long plastik doti?



Lesen ia emi save elpem ol studen blong andastanem globol problem blong plastik doti, mo ol niu solusen wae oli kam aot.

Raon long wod oli faenem gud fala solusen blong elpem problem blong doti long solwara.

5 solusen :

Nem: Anna Du

Kaontri : America

12-year-old Anna emi kreatem wan masin wea emi save go undawota blong lukluk ol mikroplastik wetem UV teknologi.

<https://www.youngscientistlab.com/index.php/entry/1669>

Nem: Seabin Project

Kaontri : Europe

Seabin emi wan rabis bin wea emi stap long haba, marina, dok, blong kolektem ol doti wea oli float.

<https://www.seabinproject.com/>

Nem: Ocean Cleanup

Kaontri: Netherlands

Boyan Slat emi statem Ocean Cleanup taem emi 18. Masin ia emi gat wan longfala inflatabol paep blong 600m long, wea emi float long oceanik gyre, blong kolektem ol doti long wan net wea emi stap andanit.

<https://www.theoceancleanup.com/>

Nem: 4Ocean

Kaontri: Bali

Simpol wei : oli salem plastik resaekol bangel blong elpem blong resaekol 1 paon solwara doti long evri singol bangel wea oli salem.

<https://4ocean.com/pages/our-story>

Nem: SeaVax Robotic Ship

Kaontri: United Kingdom

SeaVax robotic ship emi sakem aot ol plastik doti aot long wolwara, emi iusum sola energi.

http://www.bluebird-electric.net/oceanography/Ocean_Plastic_International_Rescue/SeaVax_Ocean_Clean_Up_Robot_Drone_Ship_Sea_Vacuum.htm



Aktiviti: Kreatem wan solusen blong removum plastik doti aot long solwara

Stamba tingting blong aktiviti ia i blong mekem se wanwan grup blong yufala i fainem wan wei blong yumi faitem fasin blong sakem rabis toti long solwora. Yusum eksampol we i stap long pej bifo blong raitem wan plan o bildimap wan aedia.

You will need:

- Paper

Instructions:

- Lusum ol sampol blong givim tintin long studen blong divelopem wan solusen blong removum doti aot long solwara.

Aktiviti: Talem long evriwan!

Wan veri strong wei blong karemaot doti emi blong toktok long saed long problem blong doti long evriwan, mo mekem awareness.

You will need:

- Creativity

Instructions:

Mekem wok grup blong divelopem wan wei aktiviti blong serem infomesen long wanem yu lanem long las 4 lesen.

Yu save mekem awareness ia long wan posta, song, danis, o atwok.

