



Resource Efficiency Initiative India

Stakeholder consultation Report
For preparation of Goa Resource Efficiency Strategy

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EU-Resource Efficiency Initiative is implemented on behalf of the European Union by a consortium led by the Deutsche Gesellschaft für Internationale Zusammenarbeit (GIZ) GmbH with The Energy and Resources Institute (TERI), Confederation of the Indian Industry (CII) and adelphi. The initiative aims to facilitate partnerships between Indian and European businesses and stakeholders on resource efficiency (RE) in selected sectors.

Disclaimer

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Resource Efficiency Initiative, India
Stakeholder Consultation Report
**For preparation of State Resource
Efficiency Strategy**

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1.Executive Summary



EU-REI is a consortium that supports the EU-India cooperation on Resource Efficiency in India to support achievement towards SDG 12 - Sustainable Production and Consumption. This includes a number of initiatives including the Indian national strategy for Resource Efficiency and a number of sector based initiatives and research that can be found at www.eu-rei.com . Also, part of this EU-India cooperation are 2 State level Resource Efficiency strategies and action plans in Telangana and Goa. In 2019 a Goa State Resource Efficiency strategy was formulated for Goa Government by TERI, an EU-REI consortium member. To gather inputs to and recommendations for this strategy, two participatory stakeholder consultation workshops were conducted on 11th and 30th April 2019 by a team of “Circlewallas” (Host/ guides of participatory processes) to gather bottom up feedback from civil society and the private sector, including members of the community, panchayats, entrepreneurs, CSOs, and other relevant stakeholders. The methodology initiated through the stakeholder consultation process is a container for diverse perspectives and lays the groundwork for ongoing dialogue, collaboration, learning and prototyping of new systems across an ecosystem of stakeholders towards achieving resource efficiency in Goa.

Goa has been chosen as one of three States in India to pilot Resource Efficiency (RE) and Circular Economy (CE) to foster efficient and sustainable use of natural resources for sustainable consumption and production (SDG goal 12). Target sectors for Goa are Tourism, Construction and Waste, with special attention to Marine Litter. In April 2019, stakeholders from these sectors along with civil society members were brought together for two participatory multi-stakeholder workshops to provide inputs to the Goa RE strategy. The workshops yielded the following findings:

The time & stakeholder ecosystem is "ripe" for Resource Efficiency

There is urgent need for Resource Efficiency within the target sectors of Tourism and Construction and Waste Management

These three sectors are all interrelated, with Tourism being the cause of much of Goa's construction and its waste. There is a sense that the wasteful and unmanaged approach to resources cannot go on any longer and that it is time to manage resources more responsibly and fairly, take better care of Goa's future. Future generations must have access to resources we enjoy today, and we must work to ensure there is a sustainable future for the tourism industry in the State. More resource-efficiency in the Tourism and Construction sectors is welcomed to change patterns of resource depletion and to provide new economic opportunities for local people.

A more conscious approach to balancing the resource needs of local communities with those of the industry is needed, especially in the villages.

Goa has a rich community of aware businesses and social innovators already working on RE models and ready to support RE and CE in Goa

Stakeholders from the hospitality sector, architects, waste management professionals are already engaging in a number of RE activities and are ready to work together, share

information and support one another. They just need opportunities to do this and were appreciative of the opportunity the participatory consultations provided.

There is appetite for more collective and collaborative action to change the current direction and scale up RE activities to reach operators who are not currently working to a RE model and make a difference in Goa at state level.

Tourism & Construction sectors prioritize Resource Efficiency in Water, Sewage & Electricity, as well as waste.

Whilst the national strategy focus is *abiotic* resources such as plastics, sand, steel etc. industry stakeholders from Goa's Tourism and Construction businesses named their pain-points as inefficient management of "the basics" of Water, Sewage and Electricity - all critical for a prosperous tourism business, functional buildings and community wellbeing.

New developments and communities are struggling to get adequate access to water and electricity. Opportunities for localized resource efficiency in water and renewable power exist within the state and should be scaled up to meet industry and community needs and sustainable development goals 6 (Clean water and sanitation) and SDG7 (Affordable clean energy). Whilst water, sewage and electricity are not focus areas in the RE strategy for Goa, these issues can be explored further. A government mandate for RE in water, sewage and power alongside abiotic resources (such as plastics & e-waste etc.), can make a difference as part of a broader RE approach to material recovery and reuse especially when combined with a supportive ecosystem of providers who can also support monitoring.

Prototype RE at the Village level to foster rural RE/CE prosperity and ensure new economic opportunities for Goans

Goa's village identity includes indigenous resource efficiency know-how, Goa's rural setting is at the heart of the tourism offer to visitors; Goa's villages are struggling to provide young people economic opportunities; Panchayats are struggling to deal with the complexity and scale of the tourism and construction footprint. Goa's RE strategy must support and engage local people, improve local lives and provide livelihood opportunities. Awareness and support are needed at the village level where much of the Tourism/ Construction/ Waste is happening.

Discovering ways for villages to prosper through RE/CE will support local people, boost economy/industry, protect environmental assets and help make headway on grass-root implementation of the Sustainable development Goals.

Actionable projects have been suggested and outlined. A few stakeholders are already aligned and interested in executing these ideas. Three such ideas, ranging from simple to complex are:

- ✓ **A directory of businesses and social innovators working in RE in Goa**
- ✓ **A simple RE rating system for the hospitality sector**
- ✓ **A prototype RE Village project in e.g. Calangute** to focus initial efforts in Goa's most heavily Tourism/ Construction/Waste affected village to learn how RE and CE

can work at / for the grassroots and where it is needed most. The Calangute panch members who participated in the consultation said, "if it can work here, it can work anywhere!"

Other actionable ideas can be found in Chapter 3

Awareness & behaviour change needs to address people's aspirations as part of an integrated holistic approach to RE

Lack of awareness of the problems and opportunities of RE was repeatedly stated as a key obstacle. However, **removing the awareness obstacle alone will not make a difference as critical systemic barriers exist, incentivizing inefficiency** - such as advertising, the prestige of "use and throw" and aspirations based on "greed not need". Whilst RE is part of Goa's cultural heritage, modern global consumption aspirations are move people in the opposite direction.

Awareness raising therefore needs to include a new narrative around RE that and progress, which can remind people of what they know as "common sense" and inspire people to change at all levels of society. A public information campaign would be effective if supported by the following: (outlined in detail in chapter 3 of the report)

- ✓ **Enabling policy which is actually enforced** eg new policy such as removing GST on recycled goods, enforcing existing waste policies & bans
- ✓ **The right incentives** - including tax breaks for RE options, financial credits for recovering materials/ waste, recognition schemes such as ratings & RE labeling
- ✓ **Further research** in key areas such as the health/ environmental implications of plastic being used as a secondary material in other uses e.g. construction, roads
- ✓ **Careful use of technology** particularly for i) monitoring/tracking of resources through the lifecycle, ii) transparency & quality tests iii) connecting stakeholders/ the RE ecosystem iv) supporting incentives & credit systems
- ✓ **Incubation of specific new markets/ skills/ businesses** including RE services needed to help business change practice, village level waste entrepreneurs,
- ✓ **Innovation** such as bioplastics and plastic alternatives, uses for construction debris
- ✓ **Access to examples of RE Business Practice and Operations in Goa**
- ✓ **Opportunities for stakeholders to share information, collaborate & dialogue and learn together**
- ✓ **Infrastructure & transport logistics needed mostly at the village level**
- ✓ **A new story for Goa, Goa's Tourism industry and Goan entrepreneurship**

Multi-stakeholder collective action to shift at the system level

All parts of society have a role to play, and there is enthusiasm to get going

- ✓ **Business** needs to retrofit operations for RE. RE Champions exist and can share their experience and lead others. Tourism & construction businesses can influence their suppliers. **RE communications materials are needed** for business including SMEs at village level
- ✓ **The panchayat/municipality** has a pivotal enabling role to play in raising awareness and being a centre point for people to learn & connect on RE
- ✓ **Government** can create an enabling environment through incentives & dialogue and working with other stakeholders., and monitoring and enforcement

- ✓ **Monitoring and Enforcement can be a shared responsibility**, not only governments and should include IT solutions.
- ✓ **Educators** to change their syllabus to include RE/CE & encourage research
- ✓ **Incubation hubs in the villages** to support RE/CE enterprise development
- ✓ **Civil society to segregate waste** & work with government to spread the message, change behaviours
- ✓ **Social innovators to provide a supportive ecosystem** to enable RE/CE

Working together collaboratively across sector divides can mobilise stakeholders to do their part. Implementation requires collaborative infrastructure and people for cooperation, communication and ongoing working. This infrastructure can also support SDG implementation.

2. Stakeholder Reflections: Summary of Consultation data from two participatory workshops

2.1 Stakeholder landscape and mobilization

Stakeholders from across Goan society and from the relevant sectors were contacted about participation in the consultation events. In total over 100 participants contributed their ideas representing the following stakeholder groups:

Tourism <ul style="list-style-type: none"> • Five-star hotels • Mid-level hotels • Restaurants • Beach shacks • Tourism operators • Tourists and visitors 	Construction <ul style="list-style-type: none"> • Architects • Construction companies • Miners • Sanitation/solar providers • Construction suppliers/industrial estates
Civil society <ul style="list-style-type: none"> • Youth & students including students of Architecture • civil society/community members • NGOs CBOs & faith based social workers • Educators • Senior citizens • Artists (for social change) • Panchayat and village development committees 	Waste <ul style="list-style-type: none"> • Waste management entrepreneurs • Waste management officials • waste management committee & panchayat • Upcycling entrepreneurs • Researchers
Marine <ul style="list-style-type: none"> • Fishing community • Marine researchers • Lifeguards 	Business other <ul style="list-style-type: none"> • Social entrepreneurs of eco-friendly/organic technologies & products • IT and AI professionals • Industrial Designers

Many individuals associated themselves with more than one sector - eg Construction and hospitality, Waste and construction, Civil society and construction: often with a job in one and passion as an active citizen in another or working in multiple sectors.

- i. **Output - RE contact database of those who participated:**
Participants who participated are listed in Annexure 6. Those at the workshop requested a **directory** so that they can network and follow up on ideas discussed.
- ii. **Stakeholder motivation to be involved in RE/CE in Goa:**

Stakeholders were asked why they had come and what mattered to them about participating in the consultation. Motivations can be grouped into the following areas. A full list is found in Annexure 7

- **Our Responsibility to take care of Goa, before it is too late**
 - **The Need to start reaching out to others and working together constructively**
 - **Desire for change seen from across society/ stakeholder types**
 - "To change **business** practices, share learnings"
 - "There will be **grassroot** level change"
 - "How can we change at an **individual** level?"
 - "As part of the **next generation**, I want to be a part of creating a better world for myself"
 - "Bridging the gap between business and sustainability"
 - "As a citizen and a mother"
 - **Hunger to learn how to do it differently**
 - **Need to Resolve Goa's pressing waste problem**
 - **To deal with the challenges in the Tourism sector**
 - **To deal with waste in the Construction sector**
 - **To care for coasts and ocean**
 - **Find ways to scale change - education, technology, local practical actions**
 - **Explore intelligent extraction**
 - **To create greater understanding**
 - **To know how to direct youth**
- iii. **Identification of other individuals, initiatives and organisations that could support RE in Goa**
- As part of the first event, participants crowd sourced a list of existing working RE/CE models that they knew of - in Goa and elsewhere in India (Annexure 8).
- When combined with those who came, these make up an inspiring RE/CE network, which can also be added to the directory.
 - The directory, with a little work/ funding could become an online interactive stakeholder map for RE/ CE in Goa.
 - An email correspondence has started, and an online directory is being created, likely to result in an online stakeholder map.
 - The Participatory Leadership method invites Stakeholders to share what inspires them and many were motivated to get going

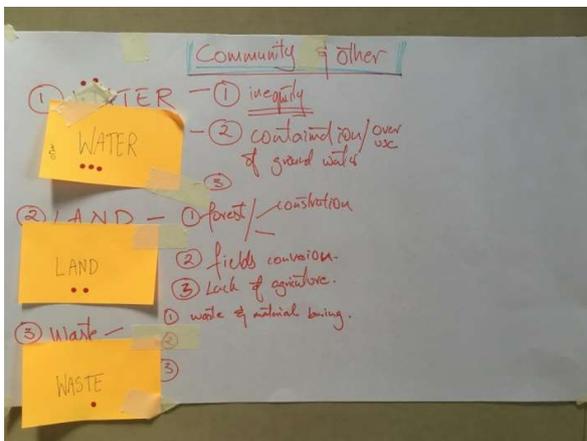
2.3 Emerging critical factors for the Goa RE strategy - What matters for Goa?

(taken directly from stakeholder inputs on 11th and 30th April)

CONSTRUCTION, WASTE AND TOURISM ARE INDUSTRIES WITH A LARGE IMPACT ON LOCAL COMMUNITIES

- their sense of place and identity
- their access as rights holders to land, clean water and clean air
- their health and wellbeing and the effects of pollution
- their access to opportunities to participate in the economy of the State.
- their attractiveness/ appeal as tourism destinations
- directly responsible for increased
 - Volume of waste
 - Consumption of (arable) land
 - Consumption of water
 - Change to village/cultural life
 - Destruction of ecosystem balance (forests, marine etc)

Added to this, consumption of local resources and production of waste for both industries is often by and for non-residents of Goa (tourists and investment property)



This explains in part why **Local Communities, Land** and **Water** were surfaced as critical resources to be considered - not only by community stakeholders, but by Tourism operators as well - forming part of what makes Goa a healthy attractive destination

Land use policy needs to be considered from RE perspective

2.3.1 CHANGE IN PRACTICE BY THESE INDUSTRIES CAN TRANSFORM GOA'S FUTURE

Resource efficiency in the construction and tourism Industries can make a huge impact on Goa's waste problem as well as help build local resilience in the face of climate change and climate adaptation.

2.3.2 ABIOTIC RESOURCES TOO NARROW A FRAME FOR TOURISM/ CONSTRUCTION SECTORS & MISSES CRITICAL RESOURCES

- **Water, Power, Sewage** are critical resources for Tourism and Construction sectors to function and prosper in Goa and currently "pain-points" for industry. Water and Power are pain points for communities who also add land into the list as a resource requiring more efficient management, looked at along with biodiversity and ecosystem services.
- *Whilst outside the scope of the national RE strategy, RE in Goa needs to address these real and present priorities. **Can Top Down/ National & Bottom up/ State strategies meet in the middle and also create strategies for the materials and resources that matter in Goa?***

2.3.3 RESOURCES PRIORITISED BY STAKEHOLDERS FOR TOURISM AND CONSTRUCTION INDUSTRIES IN GOA

- Plastics
 - Single use plastic
 - PET water bottles
 - Fishing nets
 - E-waste
 - Sand & Laterite
 - Construction Debris
 - Oil
 - Cooking oil
 - Land
 - Water
 - People & Communities (human resources)
- **When asked what resources need better efficiency, Water surfaced in all groups (Tourism, Construction and Waste),** showing this is a resource *which while outside the abiotic scope of the national RE strategy, nonetheless urgently needs more efficient management in Goa - especially in the context of increasing drought in India and the world. And whilst Goa receives one of the highest rainfalls in India, it still imports water from other states. Access to water is still a problem throughout the year and in some regions.*

With increasing tourism and construction, locals have reported dramatic drop in ground water as water tankers extract groundwater for swimming pools, traditional water harvesting is abandoned and leaking inefficient transport of water. Efficient management of water for fair access is a key issue on the ground and will only become more pressing and polarising if not dealt with now. Traditional water harvesting, water bodies and management practices did and does exist, managed by local communities, including maintenance of Bunds which kept saline and fresh water separate, enabling agriculture on the Khazans (Mangroves also perform this function and are increasingly being destroyed).

However, these practices are increasingly being abandoned, particularly in the tourist areas where locals apply themselves to more commercial activities. Water appears to now be more of a State managed resource and people are no longer caring for the water bodies in the same way, which can also be seen in the pollution of rivers and streams. There is a question around the role of different stakeholders in managing water effectively and for the long term. What is resource efficiency in Water? How can we be more resource efficient with water and build awareness of water as a circular resource?

- The awareness of water as a circular resource is very low. On the contrary water is being over-extracted, not replenished and is being contaminated and not reused. Waste flows into the lakes, rivers and the sea, contaminating these water bodies. River dredging is destroying the rivers. In places the seawater also enters the rivers because of the destruction of coastal dunes and mangroves.
- Water is not protected adequately in Goa. Commercialisation of water is a major hindrance to the circularity of this resource. There must be stricter guidelines on the use of water especially with regard to the tourism sector, large industries and construction projects and the use of water in private swimming pools. At the same time, there are leakages in the distribution of water through burst pipes. Concretising (or creating impervious surfaces) of public spaces and landscapes is reducing the ability to recharge ground water and potable water is used for everything (see actionable areas in Chapter 3).
- **Sewage** was also discussed repeatedly as a real problem for all 3 sectors - construction, tourism & waste given the lack of government sewage system. Decentralised solutions exist e.g. sewage treatment and dispersal systems but are not being used at scale yet. Traditional systems did exist in Goa, e.g. pig toilets but not appropriate at scale and less "acceptable" nowadays. Elsewhere in India, other systems exist, e.g. sulabh. Together with water this forms the WASH agenda and Sustainable Development Goal 6 - clean water and sanitation. Whilst not part of the National RE strategy, it remains a priority for Goa's development.
- **Land** was also raised as a key resource for Tourism, Construction, Waste and communities. In India's smallest state how can land be efficiently managed? Fertile land is a scarce resource globally and with food scarcity on the horizon what responsibility is there to safeguard good farming land for food production? Land was also discussed in terms of the interconnectedness with all the other natural systems needed for health, and Review of land use policy from a resource efficiency angle. Given there is so little land in Goa (only 3702 km²) how does Goa decide what is efficient use of land? And where do the needs of locals balance with economic opportunities - often where investment and profit are not Goan.
- That land is a circular and a limited resource is recognized and valued by the stakeholders. The prioritisation and definition of land-use in Goa is not compatible with agricultural needs and living needs. People have identified questions that are important to them in recognizing land, soil and water as important resources in a circular economy. Who takes decisions on the land we use? How do we define the value of land? What are the criteria for allocation of land for various uses? What is the desirable level of infrastructure in Goa? What are the needs for land by the local people? Is there a limit to the use of land for investment in tourism and construction? Is land use protecting biodiversity in Goa? How can we increase and promote the use of more local and sustainable materials such as adobe, rammed earth and mud blocks and more regenerative designs of homes and communities? How can we design for population density in Goa? What population density does Goa desire, and can Goa sustain?
- **Biodiversity** and wildlife need to also be considered for long term health of the state and more efficient "resource management".

- **Electricity/ Power** was another resource frequently discussed by stakeholders which urgently needs to be dealt with from an industry and community perspective. There is a power shortage in Goa which means the tourism industry and locals are in competition for limited power. There is also a surprisingly small amount of solar given the amount of sunlight Goa receives.

Illustrative example: In Calangute there are 4,500 village electricity connections and 15,000 commercial ones. Local villages suffer regular power shortage. A recent Gram Sabha ruling has notified that all hotels with 30+ rooms need to invest in solar panels and generate at least 30% of their electricity use, so that the village is not suffering Tourism-related resource scarcity.

- Whilst these critical resources for the Tourism and Construction industries as well as local communities to function remain scarce and inefficiently managed, it is difficult to get stakeholders to focus on less critical materials and resources. Water, Sewage and Electricity are all critical for Tourism and Construction sectors
- As a coastal State, **Goa's RE strategy needs to include planning for long term resilience that takes on board pressures from climate change and how these will impact communities, ecosystems, economy, and access to resources**
- Material flow Land: see Annexure 10, key insights included above
- Material flow Water: see Annexure 11, key insights included above

Water: actionable ideas

- Create a water map in each village
- Rainwater harvesting structures must be legislated in Goa and regulated
- Waste-water treatment plants must be installed in every building and wastewater must be used for gardens and toilet systems
- Septic tank wastes must be managed to avoid contamination of groundwater.
- Old systems for conserving water must be revived including wetland complexes and protecting trees and planting of new trees.

2.3.4 RESOURCE-EFFICIENT TOURISM MEANS CONTRIBUTING TO COMMUNITIES, NOT DEGENERATING THEM

- **An ideal tourist and tourism business contributes** to the wellbeing and livelihood of the community = sustainable tourism
- Hotels/ Business that generate high quantities of waste need practical sustainable solutions for management of all waste products and to take responsibility.
- Preserving Goa's Tourism business requires a circular approach to waste and other resources
- **Rebranding of Goa's Tourism industry to enable circular tourism industry to blossom e.g.: nature-based and sustainable, building on what makes Goa special**

- **Before the tourist season begins, there is need for a pilot project for engagement with the grassroots population of Goa** and help locals participate in RE - Engage grassroots in this conversation from the start.
- Draw on existing cooperative tourism models in Goa which are already integrating RE, such as Aangan home stays¹
- Draw on existing models of good practice in Goa²
- Develop a RE star rating that recognises RE operators and gives conscious tourists the choice to reward conscious operators with their business.
- The missing discussion in tourism in Goa - Prostitution, Alcohol & Drugs, should these be considered economic resources?

2.3.5 TAP INTO VILLAGE CULTURAL KNOWLEDGE OF RESOURCE EFFICIENCY

- Goa used to be a circular society and circularity, and resource efficiency exists in local culture and grassroots Goa - especially in rural areas and amongst the poor. It is being abandoned in favour of modern consumerism. There is need to retrieve that knowledge and mindset, skills & aspiration which still exists amongst parts of society.
- Goa's valuable resources need to be conserved
- Map the grassroot level - practices, local wisdom, skills etc. Find the low hanging fruit, examples where it is working.
- Seasonal fishing, farming and practices like composting
- Engage the masses in how to operate sustainably - gather their knowledge and help them become part of decision making at the local level. They have information to contribute and need to be heard. But also lack some basic information, e.g. burning garbage creates toxic air. Capacity building is needed - but remembering people are illiterate not uneducated - they know different things, and things of value for resource efficiency.
- Sense of pride & ownership - currently needed to protect Goa & keep clean

2.3.6 ENSURE NO-ONE LEFT BEHIND - EMPOWER GRASS-ROOT PARTICIPATION IN RE AT THE VILLAGE LEVEL

- **RE offers opportunities but also requires change. People need to buy-into the ideas being suggested for them.** There is often a disconnect between grassroots and governance with no ownership of decisions on the ground in the villages. For example, Hinterland tourism and whether those villages want it. **Involve people in shaping the RE journey – don't do it "to" people. Bottom up resource efficient development and enterprise**
- Educate locals in waste management and gather their inputs into how to do it better.
- At the village level, Panchayats and committees are mandated to manage local resources and economic opportunities. **Support panchayat initiatives and RE hubs for more efficient & effective village level governance and enterprise support.**

¹ <https://www.mrugayaxpeditions.com> (Parag Rangnekar – participant)

² O'Coqueiro Restaurant and others to be compiled in the directory

- And network villages together to create resilient & self-sustained Village networks sharing skills/ resources/ needs etc.
- Village committees are already tasked with projects like Waste management plans, but often lack time for the volume of work needed to make civic participation in the committees work well e.g. writing the letters, scheduling meetings etc. Effective coordination and administrative support to the committees will help them function optimally.
- **Model villages that can show it is possible.** The experience of seeing a zero-waste village, a model sustainable village which provides livelihoods for local people would inspire people to do more.
- **Calangute is a village at the centre of Tourism/Construction/Waste/Marine litter problems and is willing to engage in a model village project** (Sarpanch participated in consultation)

2.3.7 ENABLE BUSINESS MODELS & EMPLOYMENT OPPORTUNITIES THAT HELP GOAS YOUTH AND MARGINALIZED

- Last mile breaking down: Driver for change is sustainable business models
- Need for examples of RE economics that can work for the local level.
- Pool energies and resources into one place e.g. model village.
- Find communities who will listen. Ensure the lost voices are heard. Find ways to channel ideas
- Target youth and communities where people are grateful for the opportunity: more marginalized sections of society
- Create jobs, train and teach life skills for RE
- Channel youth into RE/CE especially Eco-design, manufacture, recycle & recovery - skills, training, livelihoods, enterprise etc
- Focus R&D and support on fostering cost-effective alternatives for local enterprise

2.3.8 LOCALS AND OUTSIDERS (SETTLERS AND VISITORS)

- Goa has long been an east-meets-west melting pot. However, in recent years the combination of increased migrant daily labour from other Indian States, Middle class lifestyle migrants from India's cities which are becoming unliveable, and emigration from Goa of local Goan's to Portugal and beyond - has resulted in a major shift in village demographics.
- Villages now struggle to maintain their identity. At the same time, the advantage of the diversity of human assets is not being utilised.
- Whilst Goa remains tolerant, it is being tested.
- "Outside businesses" don't fully understand local sensibilities. Often monies being made are not obviously benefiting Goa, Goan communities and Goans.
- Local people and culture and identity needs to be cared for in the new strategy. New economics need to ensure local people benefit in terms of jobs and opportunities.

2.3.9 BUILD ON EXISTING GOOD PRACTICE IN GOA AND BEYOND

- Appropriate philosophy and supportive technology are already out there

- Cradle to cradle, zero to zero goal of all resources used
- Knowledge of Reusability of construction debris is available but not known widely
- Learn about alternate ways of reusing products instead of disposing/creating waste
- Learn from other parts of the country

2.3.10 ROLE OF GOVERNMENT TO CREATE AN ENABLING ENVIRONMENT

- What is wanted from Government is
 - as a monitor and as an enforcer,
 - educate on finiteness and how and why to change
 - enable and incentivise alternatives
 - reimagining the future,
 - design for long-term policies
- Awareness and behaviour change are neutralized by lack of economic incentives e.g. tax breaks to dis-incentivise the use of plastic
- Enforcement of rules & implementation of existing policy e.g. ban on plastic bags etc.
- Implementation of new policies are doubtful without better enforcement and incentives
- **Other stakeholders need to work with, not against the authorities**

2.3.11 ENFORCEMENT IS A PROBLEM THAT NEEDS TO BE RESOLVED

- Disconnect between looking for solutions in policy recommendations and experience on the ground of policy not being enforced and therefore a lack of confidence in the Government
- Bans already exist e.g. plastic bags. Needs enforcement shops/ resellers
- Proper enforcement is needed e.g. penalties, fines, jail etc. must be instituted for buildings not managing their waste properly or there is no deterrent
- But this must go alongside incentives and options.
- Look at innovative resourcing of enforcement and advice/handholding for people to change - who could support government with this? Technology can help.
- Holding public accountable by encouraging public to police each other opens up opportunities for violence, anarchy and social discord.

2.3.12 BUILD AWARENESS, EDUCATE, CHANGE ATTITUDES, MINDSET & BEHAVIOURS

- Nonetheless the dominant "modern" (and aspirational) economic narrative is rather "the prestige of use and throw", NOT resource efficiency.
- Attitude change is required – based on increased awareness, information and engagement
- Perceived Hurdles: political ignorance and desire to take RE seriously, aspiration of "progress defined by consumption", access to information, dismissive social attitude of many (not all),
- Possible tools: peer pressure; media campaign, ratings, incentives
- There are lots of people in Goa willing and able to help and support - spread awareness about conscious living and resource efficiency.

2.3.13 TOURISM AND CONSTRUCTION ARE INDUSTRIES THAT CONSUME MORE MATERIALS THAN THEY PRODUCE

- People leaned towards looking for alternatives to finite resources rather than up-cycling/ re-circulating. Maybe because they were not *manufacturers* of those products and therefore less involved in the industrial process of a products lifecycle planning
- **RE in these sectors therefore involves building awareness and changing consumption patterns at a variety of levels.**
 - a. Individual level
 - b. Organisational level
 - c. Village level
 - d. Industry/Sector level
 - e. State level
 - f. Society level
- Consumption patterns and aspirations in today's world however are not confined to country or state but are global.

2.4 Systemic Issues

2.4.1 CURRENT ASPIRATIONS DO NOT LEAD TOWARDS SUSTAINABLE CONSUMPTION/ RESOURCE EFFICIENCY

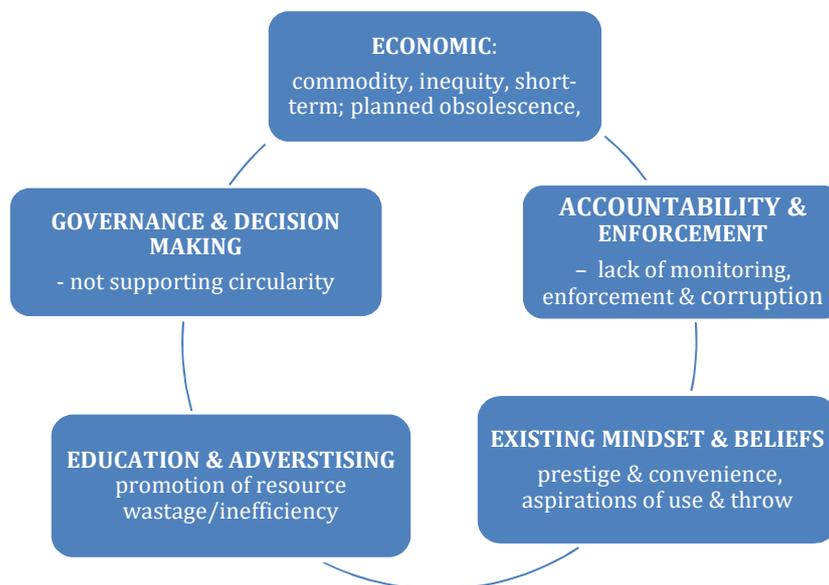
- The current economic model is linear and based on "greed not need". The Growth on Growth economy cannot sustain as an idea - GDP is limitless but resources have limits. Economy has become separated from ecology - but they are interdependent. **GDP is the criteria for progress but this is causing the problem. To arrive at circularity and resource efficiency means challenging this entrenched set of ideas head on.**
- A shift in our aspirations is needed away from consuming for its own sake, towards the basic deliverables of "Life, Health, home, community, food, education". What people Value and actually aspire to. If money is the aspiration and end goal, then the other aspirations get lost.
- The Aspirations need to change towards conserving materials and longevity (as it was before) and not "the instant - use and throw" generation we have become. We have moved away from our values, and what we value.
- Behavioural Change & changed perceptions, challenging peoples' ideas of ownership, aspiration, value etc.
- Some feel "Circular economy is almost impossible". Money and circularity cannot work together - they have different objectives. Others feel it is possible - for

example Kulugar was a traditional circular system that can make money. Mondragon in Spain was quoted as a multimillion Euro Cooperative.

- In terms of strategies for changing consumption behaviours there were some who felt the educated and the well-off have an important role to play because their resource footprint is higher and because the masses aspire to middle-class consumption patterns. Understanding the levers for change with this demographic is important.
- Outstanding questions
 - At a macro-economic level - can we accept limited growth if other aspirations are being met?
 - How do you encourage corporates to incentivize lower consumption? Circular business models offer some solutions (see Annexure 12)
 - What messaging could inspire change?

2.4.2 BARRIERS TO RE EXIST AT THE SYSTEMIC LEVEL - AND NOT MERELY AT TECHNICAL LEVEL.

Sustainable/ **circular/ resource efficient** consumption at individual, organisational and state level, in favour of greater RE/CE will require interventions in all of the interdependent systems labeled below.



2.4.3 OPPORTUNITY FOR GOA TO BE VISIONARY

LAY A FOUNDATION FOR THE LONG-TERM WELLBEING OF FUTURE GENERATIONS

- **Education & Children are the key to changing aspirations and behaviours.** Educate children and student community in e.g. segregation, resource efficiency.

- **Train youth and encourage them to be in different parts of the circular economy.**
- Plan resource use for long term resilience e.g. climate change, likelihood of resource scarcity
- India's National Mineral Policy 2019 includes this statement: "*Natural resources, including minerals, are a shared inheritance where the state is the trustee on behalf of the people to ensure that future generations receive the benefit of inheritance.*" There's also talk of no-go areas as well as caps on extraction. How can decisions and policy today protect future generations and ensure Intergenerational Equity. ³
- Plan for replenishment of natural resources and long-term wellbeing- such as the UK govt has a 25-year model to regenerate
- When the infographic was tested with stakeholders, **policy** and **people** were identified as missing, as well as replenishment which needed to be added next to waste for composting/ other organic materials returned to the natural system.
- Sikkim has become an organic state. **What sustainability leadership can Goa show in RE?**

2.4.4 GENUINELY CHANGE THE PARADIGM

- Warning - resource efficiency in a linear context leads to HIGHER consumption as products can become cheaper - thereby incentivising higher consumption - JEVONS paradox <https://www.newyorker.com/magazine/2010/12/20/the-efficiency-dilemma>⁴
- RE needs to be accompanied by shift in narrative about economic prosperity - not about consuming more but aspiring to something different
- Incentives need to be designed for circularity - currently designed for consumption & waste
- How visionary does Goa want to be? What % level of change do we want in Goa? 10% change to existing levels of material use or 80%? The target will determine the range of change and the solutions. Can Goa lead the way?
- Goa can play a role in creating a new economic story in India to address the fundamental problem with consumption in the linear/current economy (see Chapter 3)

³ <https://medium.com/p/minerals-a-shared-inheritance-for-future-generations-af004dad223a?source=email-de8a079e4019--writer.postDistributed&sk=a1a8f5b974a45aa726639670da0b7f43>

⁴ provided in stakeholder consultation on 30th April

- There is doubt that the powers-that-be will take it seriously enough to make the changes necessary

2.4.5 VIBRANT SOCIAL INNOVATOR POPULATION IN GOA IS WILLING TO STEP IN AND SUPPORT RE/CE FOR GOA

- There are lots of individuals and organisations in Goa in the "social innovators" space providing interesting products, services and projects/ initiatives in RE/CE (see Annexure 8 & 6)
- Also, a number of construction companies and hotels already implementing RE in their own operations
- People engaged with enthusiasm in the consultation events and want to be heard.
- Lots of ideas and existing activity but there is a disconnect between the initiatives on offer - and the people who would like to use/ buy/ replicate.
- There is a lack of information at the local community level.
- Perhaps an expectation that the government should do the coordination - whose role could this be?
- There is willingness and expertise amongst Goan social innovators (within industry and the civil space) who would like to work together more collaboratively for RE in Goa.

2.4.6 ENGAGE AND ENABLE BROAD-BASED INVOLVEMENT IN THE STRATEGY IMPLEMENTATION

- Economic benefit needs to scale up from the village/ organisation to the macro-economic or it will not work
- Need for connection between members of different sectors and parts of society to work together - village level locals - social innovators - government - industry - educators etc.
- Ensure ongoing follow up, support and coordination to enable the strategy to succeed across the sectors and state and not just in patches
- Help people get connected to each other and to information
- An interdepartmental RE cell within government that can also mobilise other stakeholder groups to contribute
- Public information, public involvement, communication

2.4.7 ENGAGE AT A SYSTEM LEVEL TO ENSURE COHERENCE ACROSS INDUSTRIES, DEPARTMENTS AND POLICIES

- Interconnectedness of issues and need for consistency between existing policies
- Lack of proper waste and sewage management on land is causing problems at sea.
- Previous CRZ regulation mandated proper waste management plans for coastal operators - but this is missing in latest CRZ 2019 Act.
- Risk management: pollution of groundwater, marine systems, land, ecology and effect on livelihoods and tourism will otherwise all incur costs to the government down the line.
- There is need to connect people at the systems level to help in scaling up solutions. Ensure implementation is collaborative.

2.4.8 TECHNOLOGY OFFERS OPPORTUNITIES FOR INCENTIVISING AND MONITORING RESOURCE EFFICIENCY

- Social attitudes at individual and organisational/corporate level can be changed by technology - monitoring, reward points, credits etc.
- Incentivise people for reuse, recycle, resell/buy etc e.g. carbon credits.
- Incentivise/influence by providing a rating - comparing and contrasting individual consumers/footprint
- Technology exists to support coordinated efforts across a dispersed state. Identify Tech solutions for RE/CE issues eg
 - Bitcoin for transparency of resource/ material movement
 - GIS resource mapping apps for, monitoring and mapping
 - Apps for monitoring & tracking & even testing see case study: cooking oil

2.4.9 INNOVATIVE ALTERNATIVES TO PLASTIC EXIST AND COULD BE NEW MARKET OPPORTUNITIES FOR GOA

- These are possible business models along the Extract-Design-manufacture-distribute-consume-recycle-recover-replenish-redesign cycle looking at **new materials**
- Alternative biodegradable plastics can be business models e.g. Prawn waste, seaweed, starches etc and there are existing entrepreneurs in Goa working on such models
- Needs Investment (government and private), interest, training.

In December 2017 a stakeholder workshop organised for the *Ecotourism Society of India (ESOI)* yielded six critical factors to guide a strategy for responsible Tourism in the Goan context. These are worth mentioning here and reinforce the messages coming from the EU-REI consultations

Ecological Limits Waste Management Image of Goa
Cultural Heritage Community Participation Sustainable Infrastructure

For each of the principles, the challenges with the current reality are outlined, along with existing assets and enablers, a vision for the future and next steps broken down into policy, practice, capacity building and research. This table is attached annex 14)

This section covers each of the target sectors in turn (Tourism, Construction, Waste & Marine Litter)

- ✓ **the materials** identified as priorities by the stakeholders in that sector
- ✓ **life cycles flows for 1-2 materials, mapped by participants** for to explore barriers and enablers along with materials
- ✓ **key considerations, insights and questions that need to be tested out through action learning/learning by doing prototype projects**
- ✓ **a case study of a related circular business model** that is either already operational in Goa or could be.

**Focus Sectors:
Tourism, Marine Litter,
Construction and
Waste management**



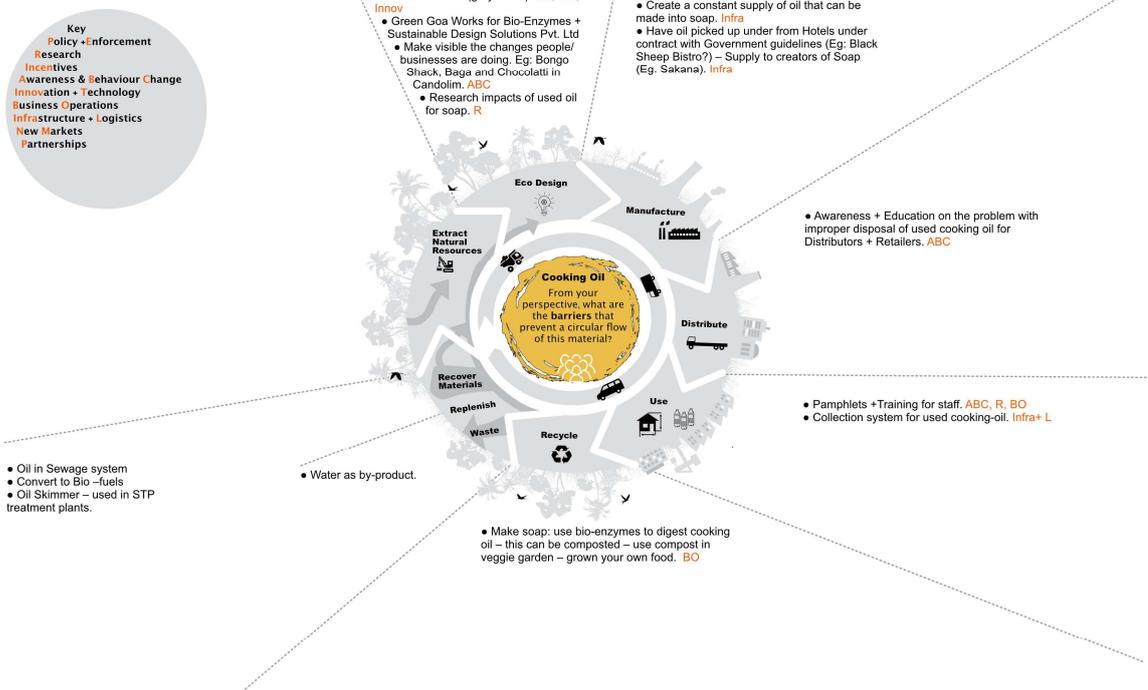
2.5 TOURISM



2.5.1 Identification of priority materials and resources

- For the industry to prosper, some basic amenities are needed which are not in place currently such as Water, Electricity, Sewage management, waste management.
- Tourism stakeholders were asked to identify priority materials for circular flows and this list was validated at the 2nd consultation meeting. Tourism stakeholders identified the following resources/materials as problematic material flows:

Cooking Oil



2.5.3 Key Considerations and Insights

- Tourism as an industry is a CONSUMER (PURCHASER) of materials and resources, not manufacturer/ producer. RE and CE for Tourism is about
 - a. Industry consumption patterns
 - b. Industry patterns of PRODUCING waste and recycling it
 - c. The consumption and recycling choices they offer their customers.
- Tourism industry is dependent upon being an appealing destination.
 - a. The health and vibrancy of place requires healthy natural resources, vibrant communities, local people.
 - b. Current waste levels are a problem for the industry with increasing anecdotal evidence from tourists that Goa is overly polluted and therefore a less desirable destination.
 - c. Tourism is also dependent on the health of other *biotic* resources e.g. *clean & healthy air* ("we don't want to go the way of Delhi"), *clean beaches and sea* which is in turn dependent on *clean rivers, forests, Biodiversity, natural landscapes*
 - d. *Tourism needs clean and vibrant, local communities, local heritage and culture, wildlife, infrastructure/ transport etc.*

Plastics



Single Use Plastic

- Friends of the Ocean, a school program ran in Pune that educates children about where things go. **ABC**
- Educate Business Schools on negative affects of extraction both socially and environmentally. **A, BO**
- Banning Products creating Producer responsibilities. **P+E**
- Sacoar Law College to give workshops in rights and laws on NGT rulings, the Pollution Control Board as well as EIA assessment. **ABC**

Plastic Water bottles Replenish: Are there any components good for the natural habitat / that can be put back into the natural system? What are the effects on the natural system of the up cycled products? **R**

- Recycled waste cannot be fully up cycled. Eg. Caps

- Sound infrastructure for getting rid of plastic. **Infra**
- Execution of waste management plan and dumping of fish nets. **R/Q**

- Many different types of plastic : reduce or limit the permissible types.
- Lack of viable alternatives to plastic products. **R**
- Designs include unnecessary packaging. **P+A**
- No standard sizes in packaging - becomes difficult to shift delivery systems and collection/recycling programs as well. **Innov+T, BO, Infra+L**
- Alternatives to virgin Paper is required for food grade paper - more trees are cut to make the paper straws or paper packing being used for shipping food. **Innov, R&T, A**

Plastic Water bottles

- Bio alternatives: seaweed, prawn waste plastic.
- Create subsidies for eco-design packing. **Incent, P&E**
- Plastic is cheap at the point of purchase (waste management /recovery costs not factored in) and light to carry. **P&E, Incent**
- Reusable drinking receptacles eg bamboo, metal. **R, Innov**
- Subsidise R&D of alternative packaging and operations to incubate new enterprise until cost effective. **Incent**

Plastic Water bottles

- Public water isn't drinkable.
- Regular testing to ensure standards and build trust.
- Public water supply needs to be at drinking standard, clean, hygienic safe and available.
- Water treatment plants? **Infra**
- Management of ground and surface water. **R, P**

Lack of...

- government policy around grading plastic products. **P+E**
- material recovery facilities and recycling infrastructure. **Infra+**
- Example: 16 tons of garbage collected by school children in Maharashtra when given incentives of ballpoint pens and stationary. **Incent, P**

- Panchayat level no/ little segregation happening. **P&E**
- Storage problems need volume. **Innov & T**

Lack of...

- A robust collection mechanism. **Infra**
- Awareness among communities about where plastic is to be discarded and how. **ABC**
- Proper disposal segregation bins in every corner. **Infra**
- Support from authority bodies for the execution of recycling in colonies. **P**
- Low price point/value when up for recycling. **Incent**
- Execution of EPR funds. **P**
- Plastic Water bottles • New products out of waste exist - eg clothes, roads + Ensure Health and safety of end of cycle or such use. **R**
- Happy Trash - confidence that being recycled. • Gujarat Bus opposed Government of Goa 100 machines, reverse vending machines. **P, Innov & T**
- A sorting list made for Goa separated by room - bedroom, kitchen, dining, bath for guesthouses. **ABC**
- Ponda tried plastic roads but the roads deteriorated fast. A company, Pune Walla uses single use plastic used for road making successfully. **BO, NM**

- Over production of plastic. **P+R**
- Politics that hinder ban on production of plastics. **P&E**
- Lack of... — funds for technology for re-use. **P+R**
- transparency and labelling (recyclable or not) on packaging. **P+BO**
- Volume of biodegradable options + price of options need to dip. **R**
- Manufacturer accountability for the use and disposal of product. **P**

Plastic Water bottles

Maintenance and testing of the water supply system

- Cultural norms
- EPR - make manufacturers or any economic beneficiary responsible for their waste.

Plastic Water bottles

- High cost of transporting non-recyclable waste to managements that take care of them. **Incent+Inno+P**
- Delivery apps eg: Swiggy have multiple ingredients in their packaging. Need to create single ingredient packing making it easy to recycle while streamlining channels. **Innov & T, ABC**
- Create an 'Unhrow stall' outside stores to give back packaging. **ABC, Infra & L**
- Create 'recover unite' so that it is easier to collect trash from central locations. **Infra & L**
- Notice on the menu of straws info on why shouldn't use. **ABC**
- Skip straws → forget to say no straw → put sticker on menus to remind people to tell their waiter they don't want a straw. **ABC**

- Too much single use plastic used. **P&E, R, ABC**
- Lack of... — why it shouldn't be used: transparency of consequences. **ABC**
- user instructions on products. **ABC**
- enforcement on plastic bans. **P**
- accountability. **P**
- education/awareness campaigns adopted across different consumer media (TV, radio, social media). **ABC**
- Mindset/cultural/religious barriers. **ABC**
- Sense of pride and superiority in using plastics (symbol of progress/development). **ABC**
- Multi-material packing pose problems. **ABC, R**

- 3D Printing Designs to make packing sustainable. **R&T, NM, Innov**
- People's purchasing practices are based on a Convenience. **ABC**
- Add tax to the packaging used in products to enable collecting it back. **Incent, P&E**
- Create only single material plastic bottles → PET chips polyester so it is easier to recycle and reuse...multi material packing is harder if not impossible to recycle. **Innov & T, BO, P&E**

Plastic Water bottles

- Need Public Drinking Water stations everywhere -this will need trust in the water system. — Water testing and certification. — Passive water purifiers — Easy way to check water: Social audits/people do random tests like mystery shoppers.

Plastic Water bottles

- Dis-incentivise fresh water for watering gardens, toilets etc
- Building trust in the system that the water is safe.
- Ban: plastic bottles + marketing of plastic bottles.
- No incentive to carry a heavier metal bottle
- Incentivise or gamify branding that makes people feel that they are part of a movement on metal bottles.
- People think Water is not safe to drink so buy plastic bottles. **ABC**
- Filtered Drinking water stations to encourage people to carry your bottle. **Innov & T**
- Hotels, Conferences and Weddings. Government events give out bottle water and plastic cutlery. **ABC, BO**

2.5.4 Current lack of awareness amongst Tourism industry of why and how to do differently

- Gap between knowledge of impact of waste, pain-points for the sector and knowing what to do about it.
- For example: cooking oil for the Hotel industry. (see material flow and also case study annexures)
 - Many do not know used oil is an environmental problem and there no compulsion/ mandate for establishments to deal with it responsibly at present.
 - Those that do know the environmental problems, say oil is big problem but lack awareness of the options
 - Yet a number of options and business models for RE/ CE in cooking oil do exist e.g. bacterial treatment, up-cycling into soap or biofuel
 - Needed:
 - information and awareness for distributors, retailers and users about proper disposal of cooking oil waste and how it can affect sewage systems and also e.g. the problem with palm oil and the damage cultivation causes

- ii. *information about alternatives e.g. separate treatment plants for kitchen wastewater (grey water) and sewage water (black water). It is also possible to use bio-enzymes to digest cooking oil and use the remaining by-product as compost*
 - iii. *training of hotel staff*
 - iv. *infrastructure and logistics support to enable people to manage the resource better - try this out with one local Panchayat who is willing to set-up a system for managing disposal and reuse of cooking oil.*
 - v. *business models and support*
 - vi. make more visible the changes that businesses and people are already doing with managing and disposal of used cooking oil. For example: Bongo Shack in Baga and Chocolatti in Candolim.
 - vii. *look for local solutions and enterprise opportunities for cooking oil waste to be recycled and reused. Soap-making from cooking oil waste is an option for locals. The oil can be collected from Hotels and restaurants, under contract with Government guidelines and supplied to the manufacturers of soap (for example Sakana restaurant. Some restaurants in Goa such as Black Sheep Bistro seem to be supplying their cooking oil waste for reuse in the making of soaps or biofuel (see case study)*
 - viii. *Not dependent on government to get going - industry can mobilise but government can provide incentives to go to scale*
- Lack of Awareness of alternative options
 - Lack of supply of available alternatives or minimum quantities to big or price-point difficult to manage (e.g. paper straws. Are straws needed at all except for coconuts?)
 - Lack of existing infrastructure and logistics for recovery of materials e.g. How sell bottles back to manufacturers?

2.5.5 What is the role of Tourism operators in RE/ CE in encouraging/ advocating RE?

- Differs depending on whether it is
 - a **building** such as hotel and restaurant which has a large resource consumption
 - or a tourism **operator** (e.g. tours, boat rides, etc.) with fewer materials flowing through the business
 - or a wedding/ event organiser which has high volume of materials for a temporary structure.

- What influence can the Tourism sector put on tourists/ customers to behave responsibly regarding efficient use of materials and waste management?
- What influence do tourism operators and hospitality operators have on their supply chains - what they procure and what they expect from the products they buy
- Tourism operator choices can influence "back up the cycle" with manufacturers and distributors" not only "down the cycle" with recyclers which is mostly what happens now (if anything!)
- Often tourism businesses are held hostage to tourism operators and what they sell to tourists or how they expect businesses to run – there is a sense of powerlessness.
- The role of tourism operators to take a stance, create awareness, offer opportunities for visitors to be efficient. How can such operators get recognition?
- Create a sustainability rating for people who are already applying RE solutions to raise awareness & create visibility, influence their peers to do the same and give conscious tourists choice.
 - Waste breakdown e.g. (1) plastic (2) wet waste (3) cooking oil (4) other
 - Wider RE simple rating e.g. (1) contribution to the power grid, (2) circular/recycling of all waste (or some), (3) sewage treatment plant (4) filtered water available for guests
 - Ask for user feedback to encourage good business practice.
 - Similar schemes exist for big hotels, but needed for smaller operators
- Create a directory of people applying these practices and offering solutions and make available when people go to get their licenses and NOCs.
- Incentives for operators practicing RE
- How can Government celebrate/ reward people who are doing good for Goa?

2.5.6 Hotels and Restaurants

- RE/Green design and construction – e.g. Greenotels, India Green Building council, Existing green construction products (product rating), RE construction (built for deconstruction not demolition), Water harvesting, Renewable energy generation, minimised energy consumption e.g., natural AC, use of vernacular materials, management of construction debris
 - Consideration - the relative scarcity of resources e.g. laterite vs mud vs concrete
 - Goa's shacks are temporary structures made from Bamboo and palm
 - Link to NOCs/Licenses
- Business operations - appropriate waste management
 - segregation at source in rooms as well as on premises

- Sewage treatment
 - solutions for circular flows of materials - e.g. cooking oil to soap, plastic to t-shirts etc. including within the premises e.g. use of treated grey/black water for gardens
 - Removal of single use plastics and replacement with alternatives
 - efficient management of refurbishment materials
- **Influencing suppliers and customers**
 - **Local sourcing of food and other materials (Note -How to go back to understanding the local seasonal rhythms for food?)**
 - **Infrastructure and logistics** for collection/recovery of used materials
 - Explore how to make a **Zero-Waste Business** either on own or as an industry

2.5.7 Operators

- **Become more aware**
- **Purchasing of products** - e.g. waste-free, reduce/ refuse small PET water bottles, ensure segregation and recycling - not littering/dumping
- **Influencing suppliers and customers**
- **Organisers of events/ destination weddings/ festivals etc** - to be more resource efficient
- **Local sourcing where possible**

2.5.8 Suppliers to the Tourism industry & local sourcing

- Ideally suppliers to Goa's tourism industry can be from Goa itself, creating a local circular economy.
- At a manufacturing and distribution level, how do you decentralise circularity in the system so that it can go through the entire cycle of production, use and recycling/ repurposing at local levels so that local economies are bolstered and there are smaller carbon footprints?
- Should there be labels on products and awareness campaigns at sellers to better inform consumers about resource efficiency and harmful impacts of pollution and/or extraction/ manufacture

2.5.9 Goa's Image - the need for rebranding and education of tourists

- Currently the branding of Goa is that anyone can do what they want, and visitors often behave in Goa in ways they would never at home, including what people do with waste.
- This matters given the scale of Tourism (7 million tourists compared to 1.4 million local population)
- However, there are also often no obvious options for people to dispose of their waste responsibly.

2.5.10 What is government role?

- Incentives and penalties for improper waste management, including revoking of license and/or RE rating
- Enforced ban on certain products e.g. thermacol (especially for weddings and festivals)
- Guidelines for tourists on responsible use of resources - already being considered by Goa's Responsible Tourism collective <https://www.rtcgoa.org>
- What is the new story for Goa's Tourism? Does the tourist influence what Goa offers - e.g. alcohol, casinos, wasteful use of resources, or does Goa influence who visits by what it offers? Visitors who value what Goa has or "use and throw" mentality?
- Better waste infrastructure needed to enable the industry to play its part Panchayat level segregated garbage solutions, including sorting, local RE business models offering employment to locals. Currently, most garbage collection is for mixed waste and does not include construction debris
- Sustainable tourism - Learn from what others doing Bhutan (low footprint), Sikkim (organic) Myanmar (responsible tourism booklet)
- Government as Enabler/Advisor: An engineer to help consult with small and medium business on 'Green practices' they can adopt. This is especially true when building - there is lack of awareness on how to build
- Implement existing Incentives
- Government affiliated garbage collection teams refusing to collect mixed garbage will make segregation happen. Especially when rotting garbage sits by the business.
- Organic Waste Converters are mandated in Delhi is it possible for Goa govt. to do the same? If already the case, is not being implemented
- Greater transparency about what happens after segregated waste is collected.

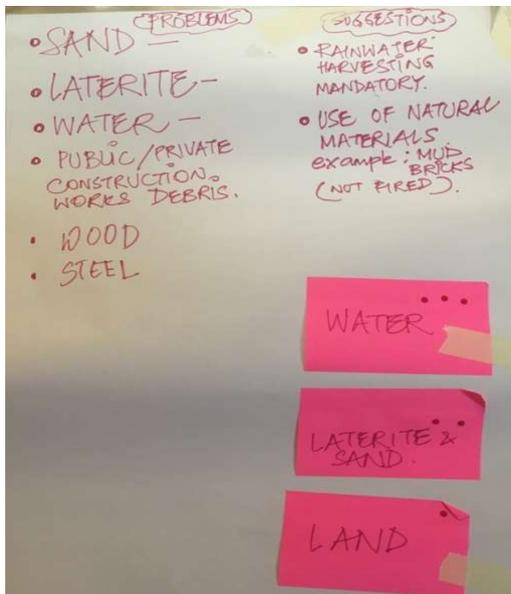
- **Integrate and mainstream Resource Efficiency into Tourism strategies⁵** and across different Tourism authorities - Dept of Tourism, GTDC,
- "RE is not government's burden to carry alone"

Case Study: Cooking oil to biofuel Annexure 18

2.6 CONSTRUCTION

2.6.1 Identification of priority materials and resources

- Construction stakeholders were asked to identify priority materials for circular flows and this list was then validated and added to at the 2nd consultation meeting.
- Tourism stakeholders identified following materials as having problematic material flows:



- Sand
- Laterite
- Water
- Construction Debris
- Wood
- Steel
- Gypsum
- Plaster of Paris (POP)
- Fiberglass
- Thermocol
- Cement
- Tiles
- Insulating materials like foam

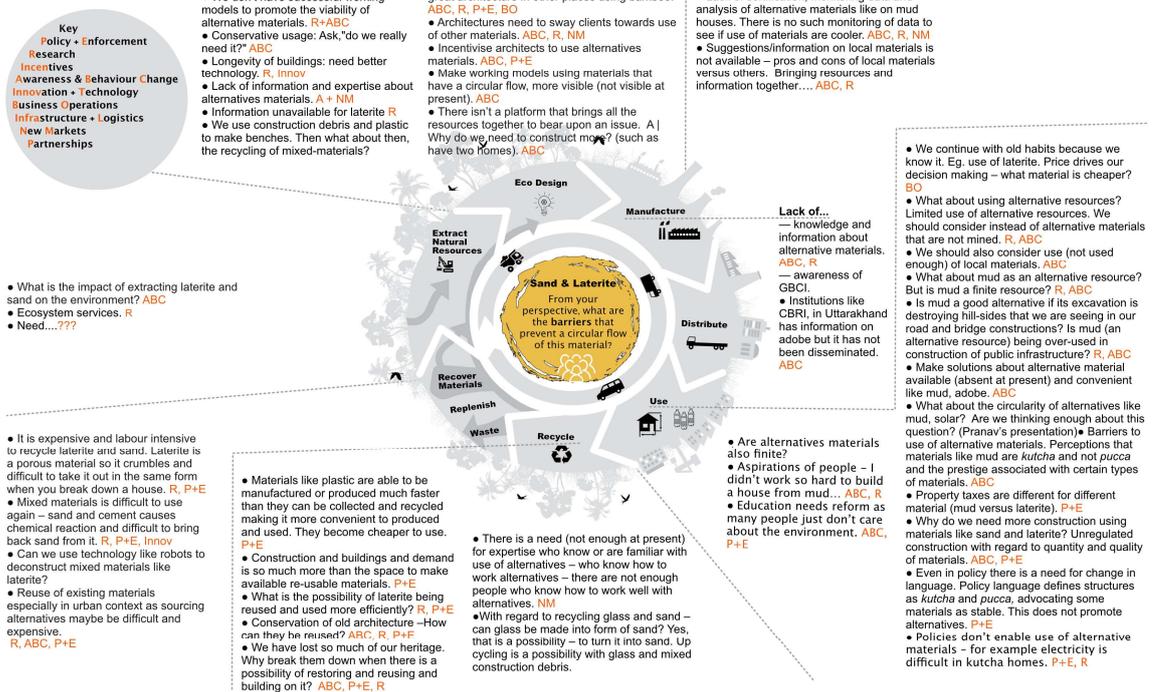
Using the materials identified, tourism stakeholders explored the life cycle of priority materials to identify where and why barriers existed. They also shared their own experiences with attempting resource efficiency and the barriers they faced.

2.6.2 Mapping Material flows

See material flows for **Sand and Laterite** (Annexure 19) and **Construction debris** (Annexure 20)

⁵ Tourism Masterplan or subsequent versions. Draw also on other existing responsible tourism guidelines and recommendations such as Ecotourism Society of India report

Sand & Laterite



2.6.3 Key considerations and insights and Questions for Action Learning

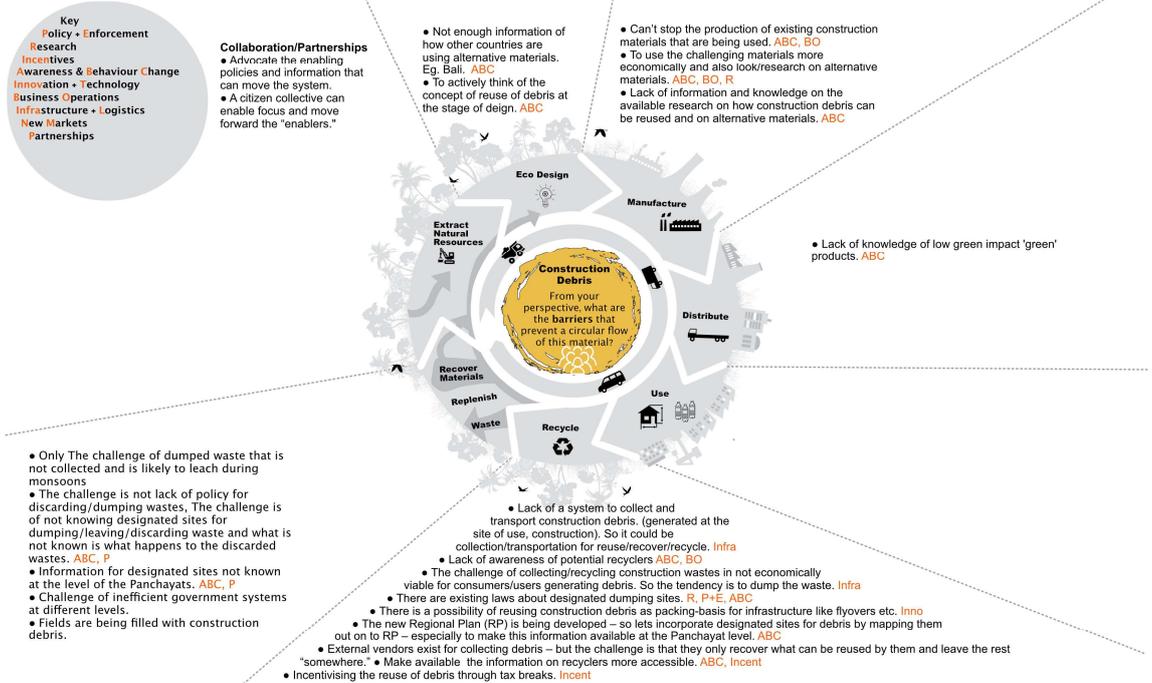
- There is an awareness in Goa that sand and laterite are very important finite resources to conserve in Goa, and that its extraction has an impact on the environment and its ecosystem-services. In addition, there is a strong recognition that these two local resources cannot be seen in isolation of land reforms, the politics that surround the extraction and use of these two resources, the policies and reforms around use of existing heritage and older buildings and livelihoods around extraction of these resources.
- It is also recognized that there is not enough information (and its dissemination) and research available on alternative types of resources and materials that can be used in construction. While mud is used in Goa as an alternative resource for construction of homes and public infrastructure, many unanswered questions don't enable its use and maybe also contribute to destruction of hillsides.

Areas for which there is not enough information and research is as follows:

- 1) Lack of information, monitoring data on important indicators and certification on alternative or local materials (like mud, bamboo etc.) and it's also its circularity.
- 2). Where there is research (for example on adobe as a material with CBRI in Uttarakhand), dissemination is limited.
- 3) To what extent is sand and laterite being used in the state and by whom?
- 4) To what extent can construction debris including sand and laterite be re-used especially when it is a mixed material (there are organizations like Sahas re-using some of the debris to make products).
- 5) To what extent can sand and laterite specifically be re-used and what is the cost involved?

6) What expertise is available on the use of alternative materials that match the aspirations of people? 7) Can the government bring in stricter regulation on extraction and use of laterite and sand while promoting the use of alternative materials?

Construction Debris



2.6.4 Actionable Ideas

- The challenge is not the absence of any one enabler, but that a whole system that enables action is missing. In fact, there seems to be a policy for discarding construction debris. But the information about the designated sites are not known at the level of the Panchayat and is also not reflected in the Regional Plan. After it is discarded, it is also not known about what happens to the construction debris, how it can be reused within Goa and outside. There is also not enough information about recyclers of construction debris in Goa. While there are some external vendors, they are selective in their collection. Very often the debris ends up in agricultural fields. In the absence of a whole system, people tend to dump the waste.

2.6.5 High construction and construction waste from Tourism industry

- Huge construction and refurbishment waste being created and not managed.
- Does the hotel industry have the intentionality in the design of their properties to question how much debris is being generated and how it is being managed? Currently not on most people's priority list.

- Construction stakeholders identified construction and demolition waste as problematic materials but did not identify it as a top 3 priority - favouring their "input" materials not their "output/waste" materials.
- However, TTAG Travel and Tourism Association of Goa named it as a problem from an industry perspective as messy and ugly.

2.6.6 Influence

- Construction (like Tourism) is also a consumer of materials produced by others (produces finished houses and waste). Therefore, the same possibilities exist around construction companies influencing RE through their choice of procuring efficient products and pressurising/ incentivising suppliers.
- Architects and architecture schools have huge role in spreading RE awareness and influencing builders & contractors to ask questions - where are materials coming from and where going onto next?
- Daily labour have little incentive to circulate resources

2.6.7 Government services and policies need revising

- Government services for collection of waste is perceived to be priced too highly so businesses prefer to either hire private service providers or not manage their waste at all.
- Even though Governments policies exist, often operationalization has issues to be resolved e.g. instead of accessing water coming from dams. Businesses are choosing to access ground water as it is cheaper/free.
- There is no support for innovation and pioneering of new technologies and processes at the policy level. In some cases, it is also blocking these pioneering techniques because of a lack of understanding by officials of what is damaging and what is feasible.

2.6.8 Lack of Awareness about RE in construction

- There is no knowledge/ awareness/ transparency about what happens to the construction waste after it has left the industrial estates
- There is no awareness on the ground about need for RE construction or possibilities
- However, a lot of information and guidance exists.
- Very few people knew there are already RE/ greener construction materials on the market - how can Indian Green Building Council support grassroots? What incentives can there be for people to use RE products?

- There are prestige issues around "pukka" houses (and materials) versus "kutcha" houses and materials. These will need to be dealt with if people are to consider different material use.

Obstacles to resource efficiency innovation in extraction - The story of a Mining company

Harsh Malwani, an iron ore miner, realised that there was a lot of mining waste being dumped - of all the minerals extracted, 3 out of 4 parts was waste. For 3 crore tonnes of iron ore, 12 crore tonnes are dumped!

He enlisted a technology institute to analyse this - it had a lot of calcium, ferrous, dolomite and calcium pentonate, which is used in nuclear reactors as an absorbant. The Department of mines did not have data about these materials and their use so there was no legislation on using/ recycling it etc. His company already has 75 crore tonnes of waste not being used. The bureaucracy is ignorant of existing potential of materials in the dumped waste. There is a lack of awareness of its potential uses and in addition the law and policy are obstructing bioremediation.

Indian steel plants are unable to use the ore extracted here in Goa because the percentage of iron in it is low, so it is exported to China where they have the technology to deal with it. So Harsh needed better technology or to increase the percentage of ore – so we improved it to 63% FE. This he did by crushing the ore, but it needed to be aggregated. So, he developed a machine for that. But despite these achievements, it was shut down in 2012. Harsh also developed bacterial leaching of ores to extract materials from low grade ore. New approaches like microwaves to break FE₂ O₃ bond were tried, releasing energy (heat plus oxygen) but the Goa Pollution Control Board didn't give permission to release the oxygen. Electrolysis of water was also an approach tried.

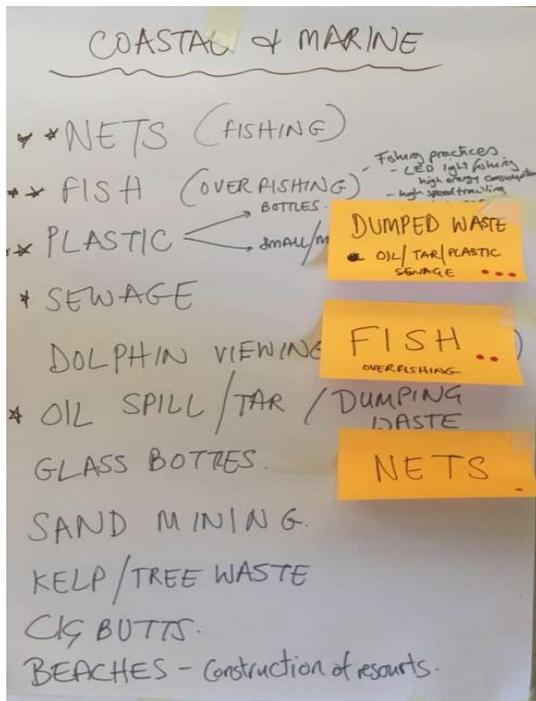
The Enablers: partnerships with researchers and research institutions.

2.6.9 Case study: Construction with Fishing nets & bottles (Annexure 21)

A case study showing how waste can become construction material - even better than steel.

2.7 MARINE LITTER

2.7.1 Identification of priority materials and resources



Dumped waste in the sea:

- Sewage
- Plastic
- Oil
- Tar
- Fish/ Overfishing
- Fishing nets
- glass bottles
- Sand/Beaches
- Cigarette butts
- Coal
- Amoniac
- Hazardous waste

Micro-plastics were also raised and discussed by stakeholders.

2.7.2 Mapping material flows

Mapped Material flow: Fishing nets (Annexure 22)

Case study on use of fishing nets in construction (Annexure 23)

2.7.3 Key Considerations and Insights

Much marine Litter is caused from a lack of proper waste management on land, often upriver. Dealing with this will mean working with stakeholders up the river systems and not just on the beaches and boats.

- Industrial waste is also a problem given current lack of monitoring and enforcement of penalties
- Given this, the Sagar Mala project of riverway industrialisation is seen as adding to the marine litter problem. There is fear that further industrialization of the river systems will only increase the pollution at sea if waste management is not dealt with adequately first.
- For people involved in the fishing sector in Goa, important questions to determine are - to what extent are fishing nets discarded as waste in Goa and are they being discarded on Goan shores from fisherman from other states of India? The fishing sector is small in Goa and seems to be getting smaller; and policy enforcement is difficult in a small sector where everyone knows each other, and people get away with violations.

- While companies like Adidas are making shoes from ocean litter, Goa may not have access to the technology as it may be patented and there may not be adequate economies of scale for repurposing for secondary use. However, a system can be set-up to collect used nets for recycling into different purposes (see case study)
- It will be useful to create more awareness on marine litter in Goa.

2.7.4 Existing policy context:

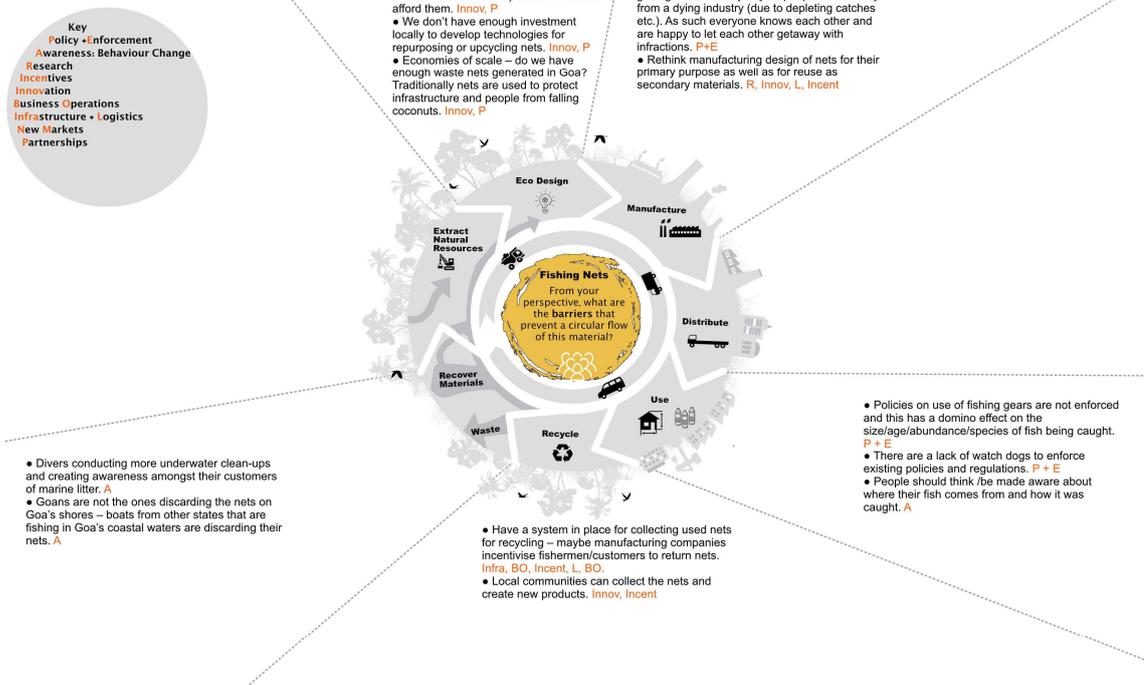
- Marine and coastal governance in Goa is based on a complex and intersecting set of policies and administrative frameworks pertaining to tourism, fisheries, panchayats and coastal development. For example, waste management of the beaches is purview of tourism department and not the panchayat.
- As a result of this, marine policy is highly complex (and at times contradictory) with no unified approach towards marine governance as a whole.

2.7.5 Scope for change in Policies

- **More integrated and cohesive marine governance – keeping in line with integrated coastal zone management paradigms** - involving long term resource efficiency for the oceans including waste/ dumping and marine health.
- **Within the marine tourism sector, develop guidelines and standards for sustainable marine tourism operations in Goa** – focused especially on minimizing impact to Goa’s marine and coastal wildlife as well as water quality.
- **Guidelines for motorized boat operations and water sports operations including waste management within** the habitat of sensitive Schedule I species such as Humpback dolphins, Olive Ridley turtles and coral reefs
- **Demarcate specific zones on beaches** e.g. water sports zones and wildlife watching zones on each beach
- **Capacity building of boat operators towards conducting more resource efficient/ waste free boat operations.**
- **Differentiate marine wildlife watching operations from water sports operations in the Policy for Regulation of Water Sports in Goa.** This is because it is highly erroneous to classify wildlife watching under the same wing as high speed water sports, since if done sensitively, in accordance with appropriate regulations, it can be an important tool to raise awareness about local marine species and be low in impact.
- Promote better and **sustainable infrastructure for supporting sustainable tourism in the state.**

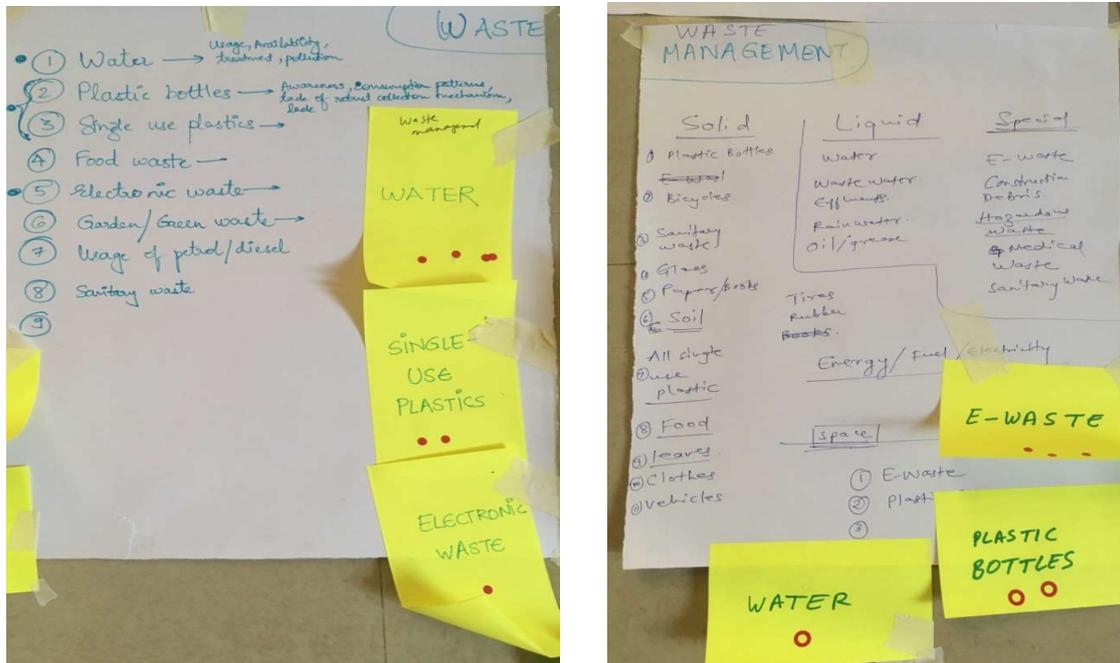
- An example would be **promoting a transformation from diesel powered to solar powered boat engines.**
- **CRZ requirements for adequate solid waste management should be strengthened** (as per 2011 CRZ regulation not the "diluted" 2019 CRZ regulation) and enforced.
- **Monitoring of coastal waste needs to be instituted**, perhaps drawing on local communities as sentinels to crowd source data using mobile phones (as being practiced in Himalayan Hindu Kush area) as well as those with technical knowledge.

Fishing Nets



2.8 WASTE

2.8.1 Identification of priority materials and resources



Using the materials identified, tourism stakeholders explored the life cycle of priority materials to identify where and why barriers existed. They also shared their own experiences with attempting resource efficiency and the barriers they faced.

2.8.2 Mapping material flows

E-waste - inputs and experiences from stakeholders can be seen in Annexure 24

2.8.3 E-waste - Key Insights and Questions for Action Learning

- Some changes to improve efficiency should happen at the stage of design and manufacturing. One of the problems users experience is the low price of products like batteries and that products are manufactured for obsolescence. The low price makes it easy to purchase and dispose rather than increase its lifespan. In addition, they are also made of sub-standard materials, often imported from countries like China. What are ways in which resources can be optimized - for example: are rechargeable batteries a more efficient option?
- Goa faces barriers to influencing design and manufacture of products and services sold in the state. Many products sold in the state are not manufactured here. What are other way in which resources Can Goa also look at ways in which resources can be used more efficiently: 1) the idea of a sharing economy 2) that manufacturers and their dealers buy-back products or recover end-of-life products.

3) policy to standardize materials that are used for manufacturing and proactive governance with regard to reducing waste at different stages of the lifecycle of products. 4) to have information on products about the materials and their negative effects

2.8.4 Actionable Ideas

- Given the size of the State of Goa, collection of e-waste can be managed at the level of local Panchayats. At present there seems to be too few collectors of e-waste in Goa. We need to have: 1) more authorised e-waste dealers and information available at Panchayats on e-waste dealers. 2) That people in villages, its homes, schools and colleges are made more aware about e-waste including its hazards especially in the way it is presently disposed, kinds of materials that are used in its manufacture. 3) Ensure safety of people who collect and handle e-waste. 4) It may need to be a collection system based on payment 5) training for people who can repurpose e-waste parts into usable items.

2.8.5 PLASTICS

See Plastics - material flow (Annexure 17)

2.8.6 Plastics - Key Insights and questions for Action Learning

- That there are many types of plastics being used as a material and there is no policy of grading plastic and plastic products. There is also lack of viable alternatives to plastic for use. The volume of biodegradable options is not adequate, and prices also need to come down. There is an overproduction of plastics and the politics around manufacturing of plastics cannot be ignored.
- The alternatives to single-use plastics and bio-alternatives to plastics are not widely available or promoted. Plastic is also cheap at the point of purchase but the cost of managing the waste, recovery and recycling it is not being considered.
- Single material plastic should be encouraged instead of multi-material packaging. During the design-phase, unnecessary packaging should be reduced.
- There is also not enough infrastructure and technology available to dispose plastics
- Avoiding plastics is an important way forward. See Case study Packaging from recycled materials – Annexure 25

2.8.7 Plastic - Actionable Ideas

- People's trust in public drinking water should be rebuilt again through regular testing and certification, better management of ground water, public water stations everywhere and even have social audits where people randomly checks
- Manufacturers can take accountability for recovery and disposal of products and to build a robust collection system

- Identify ways in which plastic bottles can be redistributed and used as optimally as possible – for example in road construction, to make fabric and yarn and other products.
- Food delivery companies such as Swiggy need to create single-ingredient packaging to reduce the extent of packaging they use.
- Create an “unwrap stall” outside shops to give back the packaging of products
- Create “recover units” to make it easier to collect waste from central locations.
- Post a notice and stickers on menu cards in restaurants to bring attention to use of plastics during the meal and to say no to plastic straws when offered by their waiter.
- More awareness programs in schools, business schools (negative social and environmental effects of products that are made from extraction, manufactured and distributed) and about right and laws by various institutions such as NGT, Pollution Control Board, CRZ, EIA assessments etc.
- To have user instructions on products

2.8.8 Key considerations and insights

- **Most people do not segregate their garbage**
- Lack of awareness/education around waste management and its negative impacts on both the environment and community health
- **Lack of policy enforcement of existing laws** is also an issue e.g. the plastic bag ban and the fines that have been set for burning waste...neither of these are being enforced.
- **Consumer mindset around packaging needs to change**, companies will change if the consumers demand it.
- Companies could make it easier for return of packaging and e-waste e.g. enclosed envelopes
- **Little awareness or activation of Extended producer responsibility vis packaging**
- **Perception that things made with recycled or repurposed materials are not as good of quality as things made with virgin materials.** Need to help create more value around these types of products.
- **Caste and stigma are a social justice feature of waste management in India.** Attitudes around the cleanliness of those who create garbage and those who clean it up is a caste issue to be tackled

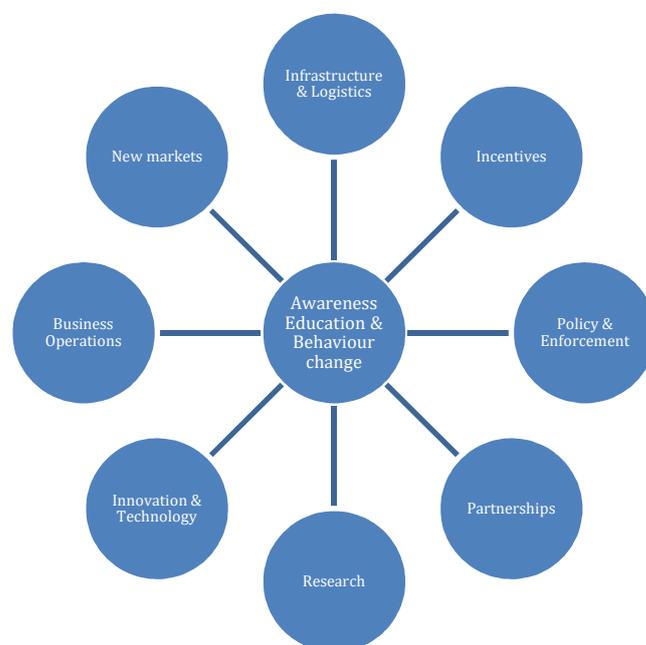
- **There is a common cultural belief because of the caste system that it is someone else's job to clean, as result it is very hard to get locals involved in clean-up efforts.**
- **Door to door collection is better than putting out bins, because they become black spots.** However, it is difficult to get door to door collection to cover everywhere immediately especially given rural spread out village network. How can collection become efficient given distances?
- **Tourists don't have access to waste disposal infrastructure.**
- Even if people are segregating at source often the **trucks who come to collect the waste mix it together**
- Garbage didn't used to be a problem in Goa, it became a problem in the last couple of decades because of consumerism and change in aspirations.
- **Medical waste is hazardous and needs to be taken seriously** as it can lead to extreme health issues for the greater community. There is currently no means of dealing with medical waste in Goa, so it is being irresponsibly managed.
- There are many wonderful waste management projects currently running that we can learn from, the main issue they face is how to scale those individuals' efforts.
- **Drop off points for specific resources would be helpful at panchayat level.**
- How to create efficient systems for waste collection? Multiple points?
- Only 2 collectors of e-waste in the whole state, **most people don't know how or who to dispose of e-waste.**
- **Single use packaging is a response to the consumers demand for convenience and belief systems around hygiene and quality.**
- Educate people about the impact all this packaging (as some are already doing and provide access to alternatives (e.g. bioplastic, recycled packaging)
- **Shift values from convenience to value and sustainability**
- **Show that with the right infrastructure, logistics and systems, being sustainable can be convenient as well.**
- **Influence** - will the consumers demand change from the companies, or will the companies demand change of the consumers?
- Composting infrastructure is insufficient to meet the requirements in terms of how much waste is being produced and the state/composition of it– the data that supported this drive is outdated

3. A Way Forward

Action Areas for the Strategy

(including stakeholders' recommendations & actionable projects)

Stakeholder reflections and inputs at the first consultation meeting on 11th April were analysed. Nine core interdependent action areas emerged as needing attention within the Goa RE Strategy. Specific inputs into these areas were then collected at the second stakeholder workshop on 30th April. Recommendations from stakeholders for the way forward are presented using this categorization.



Awareness, Education and behaviour change has been placed at the centre as it is the key to all the others. However, **each of the 9 areas identified will need to be undertaken together to deal with RE in a holistic way and at a systems level.**

Integrating resource efficiency into Tourism, Construction and Waste Marine Litter management will require participation from a wide range of people and organisations from across and at all levels of Goan society and beyond (the "system").

All stakeholders are encouraged to contribute to each of the above action areas in the areas of their interest and ability for example by providing: information, knowledge, influence, resources, networks, skills, expertise, time, champions, assets, facilities, products, funding etc..

The transition to a circular economy requires collective intelligence and action over time from across society as a collective effort. Stakeholders from the consultation process seem to welcome this idea and were keen to get going.

3.1 AWARENESS, EDUCATION, MINDSET & BEHAVIOUR CHANGE

"How can RE and CE become an acceptable way of thinking in Goa?"

- The majority of consumers are not aware of the problems/ health/ environmental hazards of inefficient product life cycles & un-segregated garbage
- Advertisement paints the *opposite* picture and "modern habits" of "use and throw" are considered progress and prestigious, though not culturally aligned.
- Goa, as a pilot RE/CE State in India for the internationally accepted new economy, has opportunity to be ahead of the global game
- Create together with stakeholders a new story for Goa
- Accompanied by **opportunities** to make informed decisions (availability), **convenience** of alternative options, **affordable** price-points and **matched with personal aspirations**.

ACTIONABLE AREAS	STAKEHOLDERS
<p>Government Leadership - Choose a new story for Goa</p> <p>Set a bold RE Goal /Vision for Goa - e.g. - 100% or 80% circulation of resources/materials, OR zero extraction-zero waste etc.</p> <p>Support image change for Goa that retains the identity and cultural values of Goa whilst also embracing the modern Circular and Resource efficient (waste free) economy. Promoting and recognising organisations that are switching to being more RE</p>	<p>Government decision</p>
<p>Collective action - create an RE multi-stakeholder platform to create new approach for Goa, including tourism industry</p> <ul style="list-style-type: none"> • Develop a collective understanding on the vision of and for a circular/Resource efficient economy. Without this, no amount of regulations & enforcement will help as people/businesses will not be able to understand why they need to make trade-off • Develop education & outreach materials to communities, businesses, colleges/schools etc working with & through stakeholders already working on this in Goa, their knowledge, assets & materials e.g. wasteless project, vrecycle, #nosup, leaders in RE from business <ul style="list-style-type: none"> ➤ Public information on RE & segregation: awareness about <u>how</u> & <u>why</u> to do differently, the risks of no RE; choices they have, home/business ➤ Directory: people and organisations with products and services and knowledge for RE/CE in Goa (Inc. upcycled products) 	<p>Stakeholder engagement process that raises awareness, and creates ownership by all stakeholders so they execute it themselves</p> <p>communities, business government, youth, academia,</p>

<ul style="list-style-type: none"> ➤ App: Design an app for people to input the challenges they're facing at individual/household levels and direct them to a Goa-based service/product that can support/help them. Since, this constitutes advertising for these organisations/products, the businesses can contribute a nominal fee (which can be based on their annual turnover) in aid of maintaining the app at the backend. • Communications campaign around RE and CE that is supported by a range of stakeholders and celebrities - Fun media and collective action campaign "Goan" story of RE prosperity and success that can excite and mobilise at a mass level. Involve key personalities in Goa to help promote the message to common man and the more affluent. Ensure Panchayat & village development committees all have access to materials targeted at grassroots/<i>local communities/at home and businesses/at work</i> etc, using print media, TV, whatsapp, village/Town level demos & roadshows. ➤ Co-ordinated set of activities & messages for all audiences (locals, businesses, communities, visitors) to inform, communicate, engage & incentivise behaviour change 	<p>social innovator network, tech community</p>
<p>Specific outreach with Goa Tourism industry, mainstreamed with other Tourism initiatives e.g. TTAG</p> <ul style="list-style-type: none"> • At state and village level with small, medium and large operators, linked to licenses and with incentives • A new RE tourism story for Goa - already on the agenda for Tourism industry (It is not about gambling, drugs alcohol or sex) • New messaging for tourists & with tourism operators outside Goa including event/mice organizer 	<p>Tourism department, GTDC, Tourism stakeholders, waste stakeholders</p>
<p>Specific outreach with Construction industry in Goa</p> <ul style="list-style-type: none"> • awareness raising of new RE products etc., RE construction methods, change language used e.g. Deconstruct (to avoid construction debris) 	<p>Companies, suppliers architects developers</p>
<p>Specific outreach with Education sector</p> <ul style="list-style-type: none"> • Integrate RE/CE into Education from primary upwards: Cultivate circular economy thinking / resource efficiency culture/innovation 	<p>Schools, colleges, universities, social innovators</p>
<p>Creation of centre for research/excellence for Resource Efficiency & Circular Economy Goa</p> <ul style="list-style-type: none"> • Learning and Research and innovation platform connecting people across Goa scientists, IT, livelihoods, training, etc. including outreach to international CE bodies/researchers. Providing knowledge support and also business incubation for new ideas • Awareness programs in schools, business schools (negative social and environmental effects of products that are made from extraction, manufactured and distributed) and about right and laws by various institutions such as NGT, Pollution Control Board, CRZ, EIA assessments etc. • Facilitation of innovation labs for RE + CE / fast prototyping /collaboration for statewide contest to find RE solutions to common challenges 	<p>Universities, RE practitioners,</p>

3.2 POLICY, REGULATION AND ENFORCEMENT - "How can regulation and enforcement support RE & circular economy in Goa?"

- Ultimately behaviours and mindsets need to be changed and policies and enforcement are needed to support this. These may be incentives (listed separately) or penalties or regulatory frameworks.
- Create together with stakeholders a new story for Goa
- Policy needs to be accompanied by **enforcement, opportunities** to make informed decisions (availability), **convenience** of alternative options, **affordable** price-points and **matched with personal aspirations**.

ACTIONABLE AREAS	STAKEHOLDERS
<p>Government Leadership - Commit to supporting a new story for Goa</p> <p>Set a RE Goal /Vision for Goa – e.g. - 100% or 80% circulation of resources/materials.</p> <p>Make people aware of the benefits available to them and their rights & responsibilities regards RE through awareness campaign</p>	<p>Government decision</p>
<p>Improve compliance with and enforcement of RE policy by working together with stakeholders</p> <ul style="list-style-type: none"> • Good regulations exist, but no accountability for enforcement Incentives/carrot alone won't work, also needs penalties/stick. • Have honest conversations about why enforcement is not happening currently the nature of challenges that the Government is facing in designing, implementing and particularly enforcing regulations so that businesses and communities can help them with finding solutions for the enforcement gap • Develop policies alongside industry and community stakeholders to avoid "them and us" syndrome and to ensure feedback loop • When regulations and policies are created, businesses can figure out how to operationalise them and create the enabling factors to realize their objectives. eg, create biofuel / treatment plants. • Develop "Code of Conduct & business case" for each industry, RE guidelines, linked to directory of who can help with compliance 	<p>Stakeholder RE Platform Industry, IT, social innovators, community members in pilot village and town</p>

<ul style="list-style-type: none"> • Monitoring - government authorized neutral private/civil contract to check implementation of code of conduct, use technology to monitor • Create regulation around new business models • More transparent government budget • Work with national level to tackle EPR Extended Producer Responsibility, already legislation for big companies but not being implemented 	
<p>Specific outreach with Tourism industry in Goa, mainstreamed with other Tourism initiatives e.g. TTAG</p> <ul style="list-style-type: none"> • at state and village level with small, medium and large operators, linked to licenses and with incentives • A new RE tourism story for Goa - already on the agenda for Tourism industry (It is not about gambling, drugs + alcohol or sex) • New messaging for tourists_& with tourism operators outside Goa including event/mice organizer 	<p>Tourism department, GTDC, Tourism stakeholders, waste stakeholders</p>
<p>Waste Policy</p> <ul style="list-style-type: none"> • Refuse to collect mixed waste. Do not collect wet waste. Only segregated dry waste. Composting at source a must. trash bins on beaches that are easily and regularly emptied to prevent dark spots also • Remove GST on recycled goods to incentivise use. 	<p>Waste management organisations, National government</p>
<p>Specific outreach with Construction Industry</p>	
<p>Education policy</p> <ul style="list-style-type: none"> • Amend/supplement education policies, procedures and curriculums to include RE/CE to cultivate RE culture, innovation, jobs 	<p>Schools, colleges, universities, social innovators</p>
<p>Address overlaps and conflicts between marine policies</p>	

3.3 CHANGE TO EXISTING BUSINESS PRACTICE

"How can businesses take initiative towards RE and CE in Goa?"

- There are many businesses already changing practice to be more resource efficient
- There need to be incentives and deterrents to support business uptake
- A clear message from Government that RE is to be taken seriously will help
- Businesses can also get on with it without waiting for Government

ACTIONABLE AREAS	STAKEHOLDERS
<p>Government Leadership - Commit to RE/CE for Goa</p> <ul style="list-style-type: none"> • Acknowledge & promote the many businesses are already doing great work in RE 	<p>Government decision</p>
<p>Business Associations</p> <ul style="list-style-type: none"> • Find good examples of businesses within each association and amplify them with their memberships, through publications, roadshows demos etc possibly even with awards. • Identify what RE information businesses need (e.g. EPR legal requirements), create visual communications to get this message across • Help spread awareness and conduct training with business • Encourage businesses to share their stories and do peer-learning 	<p>Eg CII, GCCI, TTAG, All others</p>
<p>Village level</p> <ul style="list-style-type: none"> • Support Panchayats (where there is not enough knowledge of RE alternatives) to understand and communicate what a sustainable RE business looks like on the ground - e.g. waste management. Can be linked to granting of licenses. Includes awareness materials 	
<p>Tourism industry RE task force of key tourism stakeholders including Tourism Dept, GTDC, TTAG etc.</p> <ul style="list-style-type: none"> • Identify champions within industry (some already stepped forward to support) 	<p>Tourism department, GTDC, Tourism stakeholders, waste stakeholders</p>

<p>Integrate RE into vocational training</p> <ul style="list-style-type: none"> Engage current businesses as mentor 	
<p>National level</p> <ul style="list-style-type: none"> Integrate into the MRP at the National level additional costs for collecting and disposing of products - whether by producers or the local authorities (MRP of products, means local Panchayats cannot add an additional cost to the product at point of sale to help offset waste management costs of that product. Influence companies to have user instructions on products about what to do with e-waste and packaging 	
<p>Industry & Government</p> <ul style="list-style-type: none"> Develop incentives such as tax exemption to deal with the challenge that RE alternatives currently higher priced/not price competitive so difficult for masses to make that change. Scope for subsidies, tax exemptions etc. (see next section) 	<p>Schools, colleges, universities, social innovators</p>

3.4 INCENTIVES - "How do we incentivise a transition towards RE and Circular Economy in Goa?"

- Policy won't work unless there are realistic alternatives that people/business may need incentives to counter the incentives of the current "use and throw model"
- Currently RE alternatives are more expensive than the polluting/inefficient options. E.g. Bamboo straw 30 Rs vs plastic straw 30Rs
- More sustainable alternatives are not price competitive so difficult for masses to make that change. Scope for subsidies, tax exemptions etc.

Solar was subsidized for 25 years by the government which gave the industry a chance to expand their Research and Development so they could bring their costs down and become competitive on their own right...now the technology is affordable enough that is is a better choice than coal even without the subsidy

ACTIONABLE AREAS	STAKEHOLDERS
<p>Government Leadership - Commit to RE/CE for Goa</p> <ul style="list-style-type: none"> • Commit to incentivise Resource efficiency over resource wastage 	<p>Government decision</p>
<p>Credit systems</p> <ul style="list-style-type: none"> • Incentivised garbage system/Take back system/ money-back, credit - like the bottle return vending machines that give people credit for the bottles brought back, waste pickers benefit from this system for high value recyclables • Waste bank - Collection stations where various types of waste are traded as resources for money or credits/ receive an incentive for bringing in waste - e.g. discounts at stores, paytm points etc. • Economic/in kind incentives for groups who are already segregating. e.g.: Free airtime for Maids who compost. 	<p>All</p>
<p>Recognition & Promotion</p> <ul style="list-style-type: none"> • for businesses switching to RE business models • (Bring back)Passport system that gives kids points for recycling and segregating waste properly that can be used to purchase other goods 	

<p>Tax exemptions and subsidies</p> <ul style="list-style-type: none"> • Remove GST on recycled goods to encourage reuse • Subsidies for sustainable alternatives and long enough for the technology to become cost effective for people to switch to • Remove all subsidies for non-RE products e.g. oil and ensure consistency between different incentives to favour RE - • Waive off panchayat/ municipal taxes for restaurants who are Resource Efficient (see ecolabelling below) • Food delivery companies (such as Swiggy) and other restaurants that use eco-packaging for parcels e.g. biodegradable, reusable, dhabbas etc. 	<p>Government</p>
<p>Added (material recovery) tax for non-RE products</p> <ul style="list-style-type: none"> • To incentivise manufacturers to take responsibility for recovery and disposal of products and to build a robust collection system 	<p>Government</p>
<p>Standards, RE/Eco-labelling, RE star rating</p> <ul style="list-style-type: none"> • Eco-label /rating system verified by credible body can provide assurance of RE and communicate to the consumer. Currently no uniformity/ overarching body checking accuracy of labelling or verifying if products are "true"/not greenwashed • Hotel /Restaurant RE star rating - for hotels managing their resources efficiently - particularly including water, power sewage & waste linked with Social media (e.g. ratings on trip advisor) for RE in Goa • For recycled products so people are more comfortable to buy up-cycled products 	<p>Relevant industries</p>

3.5 NEW MARKETS, ENTERPRISE, SKILLS & LIVELIHOODS

"What business models can be seen for RE and CE in Goa?"

- Lots of ideas and entrepreneurs out there - How can Goa get optimal value from the materials/resources coming into the state?
- Requires new investment and incubation skills which are also already existing in the ecosystem

ACTIONABLE AREAS	STAKEHOLDERS
<p>Government Leadership - Commit to RE/CE for Goa</p> <ul style="list-style-type: none"> • Commit to RE as a new economic thrust area for Goa 	Goa government
<p>Incubation for new business models</p> <ul style="list-style-type: none"> • Investment, mentoring, business planning, market linkages, investment etc. • Create Incubator Spaces to quickly prototype ideas and alternatives and assess viability – technical expertise, money + consultancy • Can be at panchayat level, or Taluka level or at RE centres 	All stakeholders
<p>New innovation to meet Goa's needs, draw on native materials, use secondary materials</p> <ul style="list-style-type: none"> • Bio Plastics & plastic alternatives are needed, or a plastic ban won't work. Examples already under development but in of need incubation e.g. 1 seaweed Pouches for Water and Drinks, pouches biodegrade or can be eaten e.g. 2 prawn waste plastic - transparent +durable - bottles and cans made out of it. • Improving resource efficiency management e.g.: monitoring water use /efficiency Aqua Agro, technology (see technology) • Recycle sewage waste into safe farming fertilizer at a profit for example http://www.sanergy.com/ • New materials from Goas crops e.g. Bamboo, Coconut, Banana, Hemp etc. (being used internationally) (see coconut case study) • Upcycling Goas waste materials into secondary material - e.g. plastic bottles, glass/beer bottles etc. 	
<p>Repair markets - new skills</p>	

<ul style="list-style-type: none"> • Create a database of existing repair craftspeople e.g. E-waste repairers, shoes etc. - reviving old skill and teaching to youth • Train youth/apprenticeship 	
<p>Recycled/vintage goods</p> <ul style="list-style-type: none"> • Thrift/vintage stores for recycled goods • OLX type platform for materials & material exchange 	Government
<p>New B2B services for RE compliance</p> <ul style="list-style-type: none"> • Service to support the Panchayat on Sustainable Businesses including research, Data, Technology, finance etc. • A Certificate course in Composting – creating Home Gardens - Professional Composting • Shredding: Hiring shredders to cut up bio-waste in each neighborhood to facilitate local composting + prevent the practice of leaf burn and use the material differently teach people how to make and sell compost. • Service: Graphic Design business to create <i>Awareness</i> around local issues. • Teach RE/raise awareness • RE advice & plans for all events and festivals taking place in Goa to minimizing event garbage. • Cash prize competitions from specific industries for innovative ideas that meet their challenges 	Relevant industries
<p>Entrepreneurship skills building</p> <ul style="list-style-type: none"> • Scale up waste management entrepreneurs - Vrecyle has a system for segregation and collection that currently diverts 95-98% of the trash he collects from the land fill. He currently manages about 2% of Goa's waste. He believes that with 150 people running similar programs then we could manage 100% of Goa's waste in a sustainable way with minimal investment through this decentralized system. 	
<p>Develop skills for life-cycle assessments</p>	

3.6 RESEARCH, INNOVATION & OUTSTANDING QUESTIONS

"What more do we need to learn to move towards RE/CE in Goa?"

ACTIONABLE AREAS	STAKEHOLDERS
<p>Government Leadership - Commit to RE/CE for Goa</p> <ul style="list-style-type: none"> • Collaborative Research platform bringing together all the research bodies in Goa to pool their RE portfolios and develop new research and collaborate on RE learning and innovation in Goa, • Foster an RE research platform linking different universities and researchers to and also to be a point of contact with people with ideas or industries with challenges to be tackled. Can link up with European/other international or Indian institutes. 	<p>Goa Government Research Bodies</p>
<p>Secondary materials</p> <ul style="list-style-type: none"> • Target priority waste products in Goa and learn how they can be secondary materials for another business models e.g. food waste, mining dumps • Specifically carry out feasibility research for cooking oil to bio-fuel business and market in Goa • Explore application of fishing net construction in Goa • Identify ways in which plastic bottles can be reused as optimally as possible in Goa – for example in road construction, fabric, yarn etc. • 3D printing designs to make packaging sustainable 	<p>Research bodies</p>
<p>Carry Capacity and forecasting research</p> <ul style="list-style-type: none"> • Water - current use, future projections, strategies for efficient management including harvesting etc. Include projections if tourists drank local water rather than bottled water • Explore potential of decentralized waste management approaches in Goa 	<p>Research bodies</p>
<p>Invest in R&D for plastic alternatives from e.g. recycled materials, bioplastics for</p> <ul style="list-style-type: none"> • biodegradable sanitary products and diapers and look for local business models to meet Goas needs 	<p>Government</p>
<p>Health hazards of secondary materials in different contexts</p> <ul style="list-style-type: none"> • Plastics on roads (run off into the soil?), upcycled plastic degradation, • Research impacts of used oil for soap 	<p>Research Bodies</p>

3.7 TECHNOLOGY - "How can technology support RE & CE in Goa?"

- Technology can support RE by helping to manage big data and provide transparency
- Caution must be used to ensure the right balance between privacy/surveillance/

ACTIONABLE AREAS	STAKEHOLDERS
<p>Government Leadership - Commit to RE/CE for Goa</p> <ul style="list-style-type: none"> • Embrace technology to support resource governance 	
<p>Technology for monitoring resources and creating accountability</p> <ul style="list-style-type: none"> ▪ Decentralised resource-mapping to support better resource governance at panchayat level - see infrastructure ▪ Resource tracking (including testing) is already being used in Maharashtra for biofuel (see case study) and could be used to track other resources around the lifecycle ▪ (OLX for materials) A data-driven digital platform that connects users/consumers, businesses, buyers and a potential market that can sell recovered/reused materials ▪ An efficient logistics app or platform that can manage logistics of goods moving around Goa more efficiently ▪ Blockchain to monitor and ensure trust and transparency of circularity was also suggested as a shared ledger ▪ An app for RE support where people input the challenges they're facing at individual/household levels and direct them to a Goa-based service/product that can support/help them. • Water stations with tech that display water quality • Surveillance app/tech that allows people to do random social audits 	<p>IT companies, industry, logistics companies</p>
<p>Technology to enable incentives</p> <ul style="list-style-type: none"> • Incentivised waste collection using technology support providing vouchers /coupons etc. with participating businesses 	

3.8 INFRASTRUCTURE & LOGISTICS

"What infrastructure improvements are needed to support RE & CE in Goa?"

- Infrastructure and logistics needed most at village level and mobility between villages/towns

ACTIONABLE AREAS	STAKEHOLDERS
<p>Transport logistics</p> <ul style="list-style-type: none"> • Invest in sustainable RE distribution and take-back transportation systems for Goa 	Goa Government
<p>Waste/ Panchayat Level</p> <ul style="list-style-type: none"> • Village segregation Unit: A place for awareness about different categories of resource (segregated waste) as well as collection and storage for some key hazardous items e.g. batteries, CFL bulbs, tube lights etc. • Multiple collection points at different places (supermarkets, panchayats schools etc) where people bring back waste and get incentives for positive behaviour modification. Also “unwrap stall” outsides stores to give back the packaging of products at point of distribution 	Panchayats
<p>Tourism/ Panchayat level</p> <ul style="list-style-type: none"> • Efficient Logistics for material recovery in villages • Bio-fuel aggregators and biofuel plant to convert 	Panchayats
<p>Tech infrastructure</p> <ul style="list-style-type: none"> • Online platform for resource/material exchange, purchase (see technology action area) • RE Surveillance and mapping at the village level of good and poor practices – to reward good practices at the village level. For example: the cleanest Panchayat etc. or provide support to change poor practices. 	Government
<p>Drinkable public water</p> <ul style="list-style-type: none"> • Invest in drinkable public water and refill water stations/ networks to avoid plastic bottle waste at scale 	Relevant industries
<p>RE Centre</p> <ul style="list-style-type: none"> • Physical space for creating awareness around the issues and opportunities for circularity of resources, dialogue, incubation, information, transition ideas to action, connect to experts 	

3.9 COLLABORATIVE PROJECTS & PLATFORMS

"What collective action is needed to support RE and CE in Goa?"

- Most of the strategy will need different stakeholders to work together
- Some specific projects were identified as being flagship prototyping projects - for learning and iterating RE in Goa

ACTIONABLE AREAS	STAKEHOLDERS
<p><u>Multi-stakeholder RE Platform for RE implementation in Goa</u></p> <ul style="list-style-type: none"> • Collaborative infrastructure to enable system level RE action across sectors and society • Includes all stakeholder types and task forces for different elements e.g. Tourism, research, Business engagement, Marine etc. • Supports them to mainstream RE awareness and develop materials (and curricula in education e.g. waste management already started) • Enables communications/collaboration across demand / supply and value market chains. e.g., fishermen, restaurants and consumers. • Champions and leadership from Business, Industry associations, Government departments etc. • Feeds back on the impact of new instruments/infrastructure/bans, incentives, policies etc. so government can adapt them on ongoing basis. • Creates a public information campaign, about segregation, RE & Waste and why good for Goa • A platform bringing together social innovators, Industry, Researchers, government, civil society for ongoing dialogue and action. Include Goan celebrities and influencers in public awareness. This has proved successful in other areas in India and around the world. 	<p>Goa Government</p> <p>All other stakeholders</p> <p>Conveners and intermediaries</p>

<ul style="list-style-type: none"> • Include measurement and tracking change in consumer and business behaviour 	
<p><u>Resource Efficiency Star rating for hospitality sector - TOURISM PROTOTYPE</u></p> <p>A desirable hospitality operator is one that takes responsibility and ownership for its resources and contributes to the community/ destination in which it makes its money. Based on a handful of simple indicators, customers can choose Resource efficiency and hotels/restaurants can know what is expected of them. For example</p> <ul style="list-style-type: none"> • Contributes power to the grid/generates some of its own power so as not to take power from the local community and contribute to power shortages <i>(NB this resolution has already been passed at the Calangute Gram Sabha - Hotels with 30+ rooms have to generate 30% of their own energy from renewable sources)</i> • Harvests and recycles water • Recycles solid waste and composts kitchen waste including having a circular cooking oil plan • Has sewage treatment plant • Manages its construction and refurbishment debris • Discourages guest use of single use plastics e.g. straws, cups etc. • Offers filtered water rather than bottled water to guests <ul style="list-style-type: none"> ➤ Many hotels and restaurants are already doing this, they can be recognized ➤ Integrate with multipliers such as booking.com, TripAdvisor etc. ➤ Articulate the business case for hoteliers ➤ Help tourists to contribute to resource efficiency ➤ Engage panchayats to help make smaller operators aware of options, rights and responsibilities ➤ Identify Leaders from Government, industry, social innovators etc. 	<p>Hotels, restaurants, TTAG, Shack owners,</p> <p>Dept of Tourism</p> <p>Responsible Tourism Collective,</p> <p>Goan industry key people e.g. Titos,</p> <p>Relevant RE businesses</p> <p>Social innovators</p>
<p><u>Prototype Village - Calangute - SYSTEM PROTOTYPE</u></p>	<p>Calangute Panchayat (already "in")</p>

<p>To focus a number of RE initiatives into this one village which experiences the most extreme Tourism, Construction Waste and Marine Litter issues whilst also balancing with needs of locals.</p> <ul style="list-style-type: none"> • focus all efforts on one village so as to amplify impact and create a demonstration village to win hearts and minds • Learn how to bring about RE in a village that has to balance local needs with Tourism, construction, waste and Marine litter problems • Seek to create Village prosperity, deliver SDGs and resilience and enable local people to participate in RE development • Opportunity to learn how RE can support the Panchayats to be nodes for supporting village level awareness, engagement, innovation and implementation of RE circularity at the grassroots. • Test in other villages (e.g. in other pilot Talukas such as Pernem, Salcete) could take on some aspects/initiatives where there is appetite, or presence of particular social innovators or advanced business practice. <p><u>Concentrate and scale up existing RE initiatives</u></p> <ul style="list-style-type: none"> • Terra Mera Waste bar - incentivised beach clean up - scale up existing Baga pilot • #nosup - no single use plastics campaign - existing social innovator campaign targeting juice stands etc. raising awareness about reducing use of plastic straws and cups (Aranya Research) and where menus carry a sticker asking people to " skip the straw" • Water refill stations to avoid excessive PET bottle waste - existing social innovators (e.g. Carry your bottle) working on creating a network for replenishing refillable bottles. This can focus on Calangute. Initially using 20litre bottles (already recycled at 100%, so as not to put huge drain on local water. Longer term, potable public water can be looked at). There is a role for technology in mapping out and making water routes visible eg in an app <p><u>Invest in new initiatives</u></p> <ul style="list-style-type: none"> • info-materials: Awareness & RE alternatives for tourism operators - about RE options for hotels, restaurants, boat operators, liquor shops, tatoo parlours etc. including options for treating and recycling different types of waste. Know-how with existing waste stakeholders. Possible role for industry CSR in supporting well designed materials. • RE hotel and restaurant rating system outlined above 	<p>Local RE team</p> <p>Social Innovator network</p> <p>Supportive MLA</p>
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<ul style="list-style-type: none"> • <u>Stakeholder engagement process to build awareness and engagement</u> in Calangute with local/grassroot stakeholders, as well as supply chains and infrastructure/logistics to mobilise collective action on RE (similar to the participatory process during the stakeholder consultation workshops) This suggestion came from Calangute panchayat and waste management committee representatives. • <u>Cooking oil up-cycling</u>: Either local cottage industry soaps (existing social innovators in Goa can step into support) or longer-term exploration of bio-fuel aggregator/plant • <u>Community monitoring</u> to support delivery of RE goals and tracking of evidence, stories of change etc. <p>To make this work requires:</p> <ul style="list-style-type: none"> • Local RE team on the ground to co-ordinate / connect with stakeholders, learn what is needed at village level for co-ordinating RE ecosystem and connecting with stakeholders, monitor, problem-solve, connect with Panchayat, Identify local opportunities, develop a model for village engagement that empowers people to contribute; Learn how to incubate RE opportunities at village level, explore clusters of villages • Can be comprised of existing Panchayat/committee members, youth connectors and an strategic oversight team for mentorship and some basic training in methods of collaboration and coordination. Team will need stipends so either grant funding or CSR/Sponsorship from local businesses • Enabling & supportive Panchayat - already in place, Calangute Sarpanch participated in the consultation. • Enabling and supportive Government to connect with relevant departments and other parts of the system • Inviting & mobilising the network of RE social innovators to support Calangute & work together in one place. 	
<p><u>Construction Debris pilot - CONSTRUCTION PROTOTYPE</u></p> <ul style="list-style-type: none"> • Intensive campaign for awareness raising around RE construction - Work with retailers of construction materials and architects to raise awareness of both RE materials/supplies and building techniques. Provide free copies of e.g. the deconstruction manual to retailers and wholesalers. • Ensure information accessible to people when they are applying for NOCs i.e. at the panchayat level • Incentives around RE construction materials and disincentives around creating lots of debris • Make more publicly available information on debris dumping locations 	
<p><u>Water management Initiative</u></p> <ul style="list-style-type: none"> • RE in Water Management, ground water, water use, resilience, including drinking water /public water stations regular testing /certification 	

END NOTE and Way ahead:

The recommendations emanating from the consultations have been incorporated in strategy for 'Fostering Resource Efficiency (RE) and Circular Economy (CE) in Goa'. The strategy was released by Chief Minister Dr Pramod Sawant and EU Ambassador Mr Ugo Astuto on February 25, 2020, making Goa India's first state to have a Resource Efficiency strategy. The strategy presents a resource efficiency roadmap for tourism and construction along with addressing the issue of marine litter and recognises the emergent need to use resources judiciously across lifecycle stages, in order to sustain Goa's long-term development and societal wellbeing.

Post release of strategy document, a working group has been formed by EU Delegation, which include EU-REI team (GIZ), EBTC, Circlewallas, TERI Goa and The Sustainable Green Company among others to sustain the momentum created and further engagement with Government and other stakeholders for operationalising of the action plan outlined in the strategy. The working group will mainly focus on a demonstration village to pilot various initiatives including social innovations that foster RE and CE at the village level and identifying viable business models on the principles of circular economy, now also in support of economic recovery and resilience post-covid19. Other recommendations in this report and the strategy that are needed for an enabling environment for the RE demonstration village will also be explored. Detailed action plan can be referred in the RE Strategy document.

In addition, EU-REI will also implement capacity development programme for different stakeholders in partnership with Ministry of Environment Forest and Climate Change (MoEFCC) and Govt. of Goa as part of implementation of draft National Resource Efficiency Policy (NREP) released August 2019. To start with, a Training of Trainers (ToT) toolkit has been developed on RE & CE in partnership with MoEFCC. Training would be imparted to select stakeholders to create a pool of trainers on RE&CE, who will then further impart RE & CE training in their respective domain areas.

Also, once the draft RE policy is notified by the MoEFCC, EU-REI team will be identifying options of engaging with the state government, businesses, civil society and local stakeholders towards identifying further collaboration options to strengthen EU-India business partnerships