



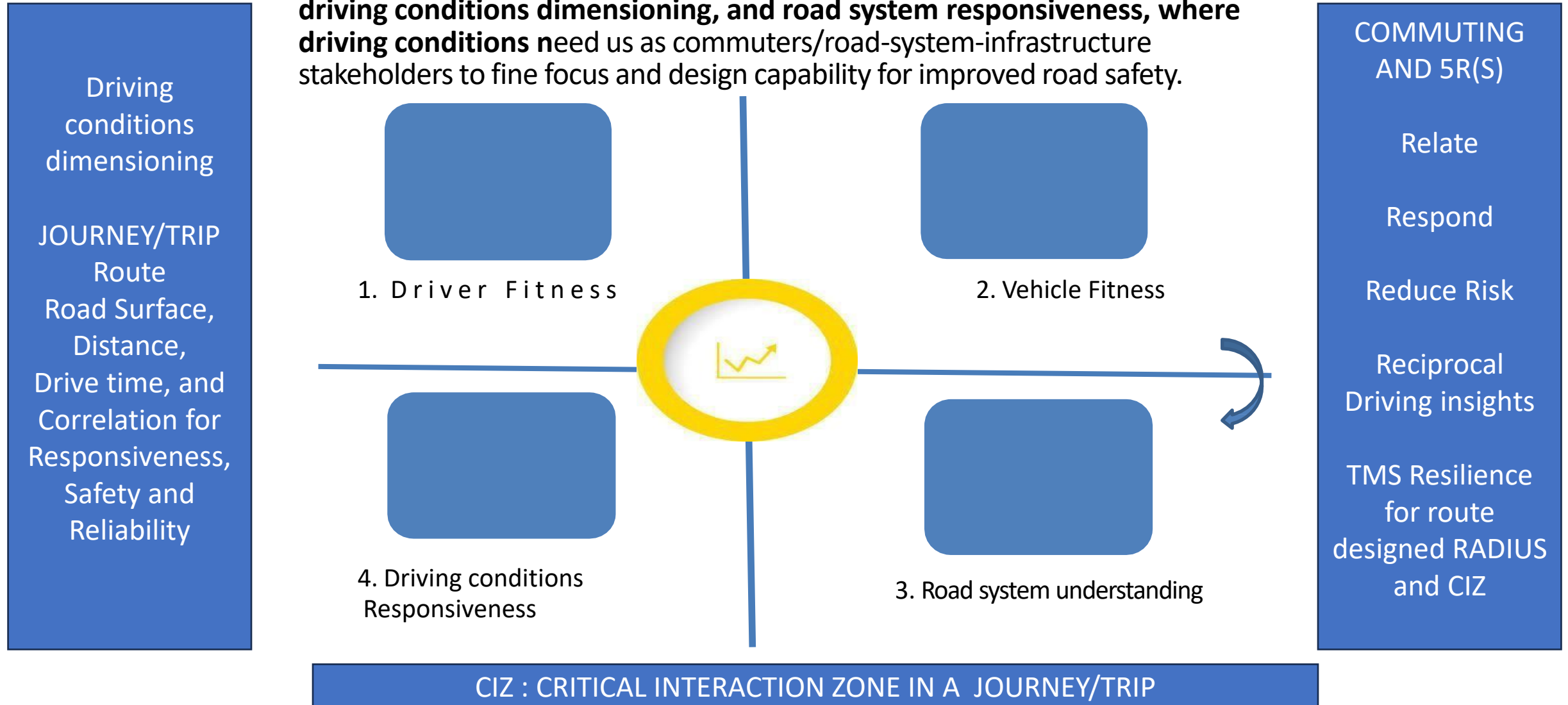
Road Safety / Support is a
mainline National Safety
and Social Responsibility

DASHBOARDING ROAD SAFETY / SUPPORT BY VENKATRAM K S, AOEC 2026-2027

OCT
2026

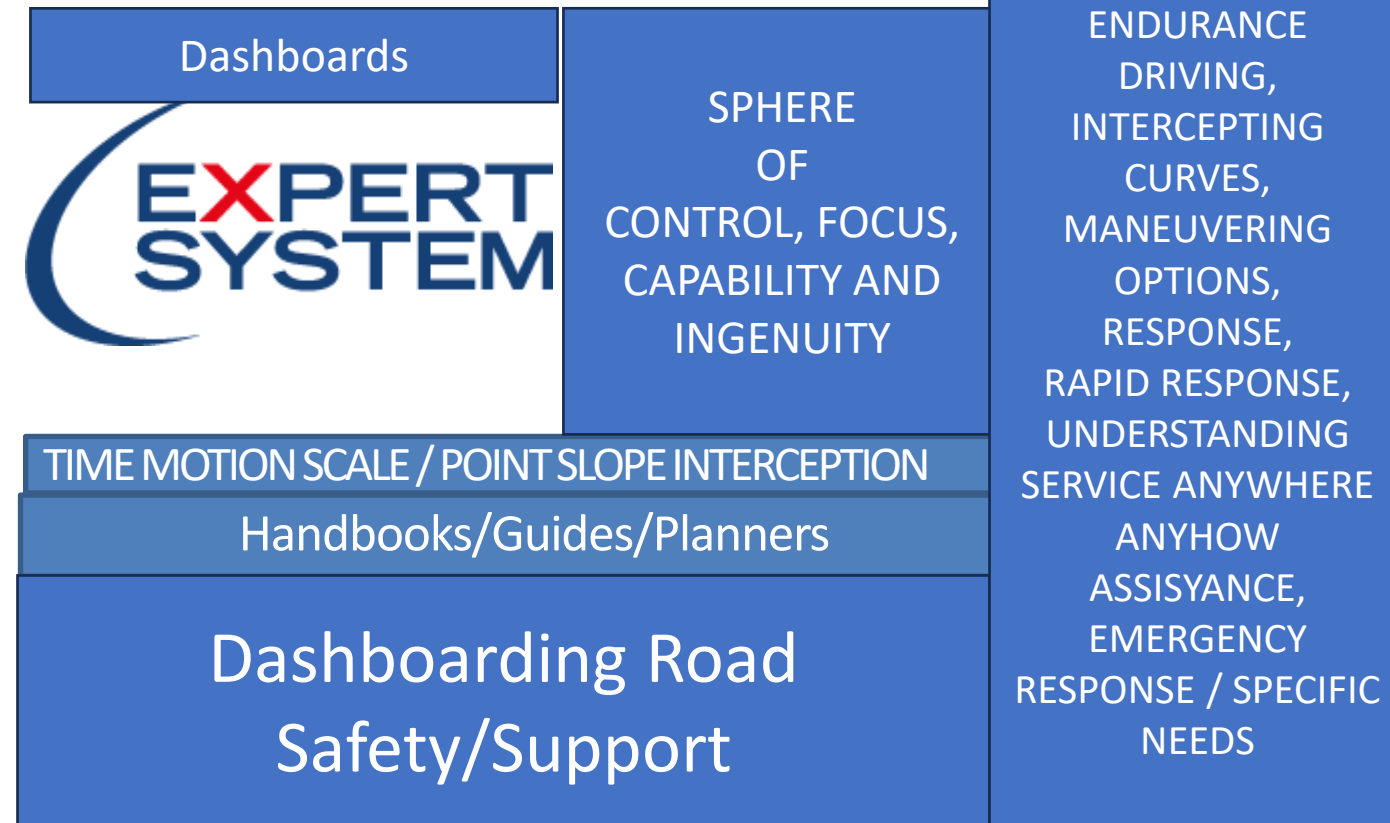
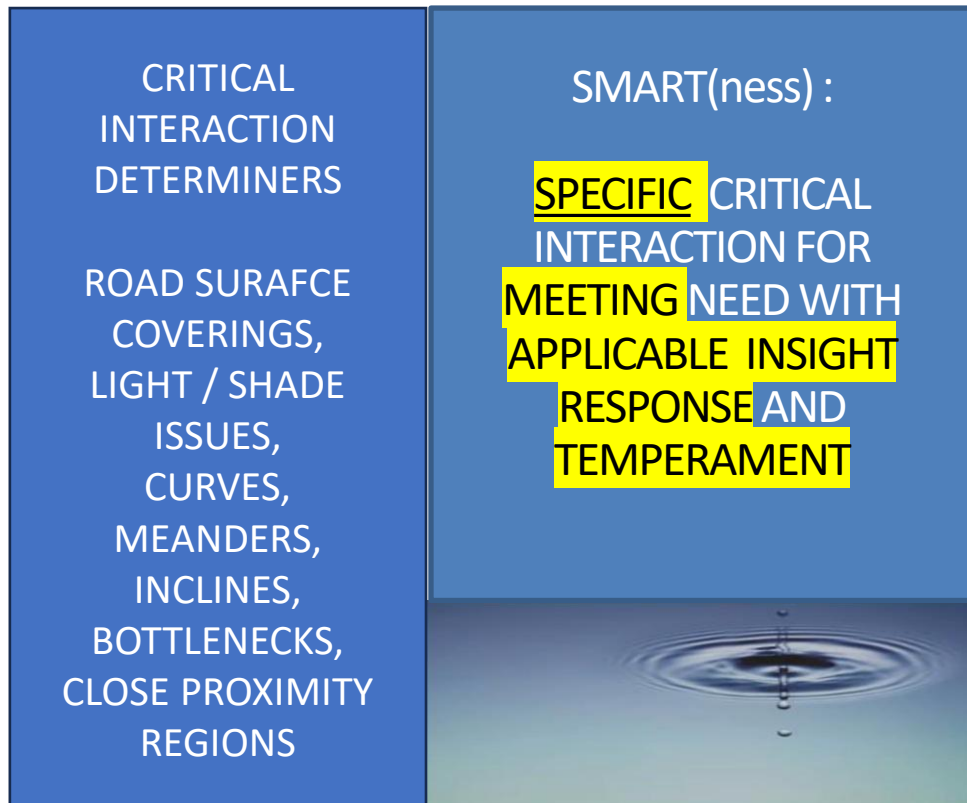
Dashboarding Road Safety/Support

- **AOEC finds that safety while commuting on road, depends upon the automobile manufacturer's quality assurance, driver fitness, vehicle fitness, driving conditions dimensioning, and road system responsiveness, where driving conditions need us as commuters/road-system-infrastructure stakeholders to fine focus and design capability for improved road safety.**



Dashboarding Road Safety/Support

- AOEC finds that instrumentally, Dashboarding Road Safety / Support (DRSS) projects must
- define a TMS workflow for accentuating
 1. Driver Fitness
 2. Vehicle Fitness
 3. Road system understanding
 4. Alpha Assistance
 5. 5R(s) SMART(ness) for a safer journey



Dashboarding Road Safety/Support

- DRSS SMART(ness) for a journey/trip and virtual POINT SLOPE INTERCEPTION can make it simpler to identify the tangible correlation between driving conditions dimensioning of a route/road system/road with a DRSS Workflow to help and improve safer commuting
- This DRSS Workflow plus NSSR RS programme teamwork can
 - Record-or-review,
 - Relate,
 - Reduce risk,
 - Reciprocate response and
 - Design Resilience for any journey/trip and its dimensions like the
 - road surface,
 - distance,
 - drive time,
 - commute reliably factors, where there is universal or brand specific service centre-assessable part-lifetime mitigation, condition monitoring, ttrafficable fault tolerance/preventive and corrective action, where this DRSS Workflow development can help a NSSR participant define/use a NSSR RS index for a journey/trip/TMS radius, where the index can be simply (1), (2), (3), (4) or combinations of them

The NSSR project recommends the use of different assistants to help commuters improve their experience

Dashboarding Road Safety/Support

- **(1) NRRS-I1:** = where this workflow will need to address History of interaction & Foreseeable needs and 5R(s)
- **(2) NRRS- I2:** = this workflow will need to address Critical Interaction Zone needs and 5R(s)
- **(3) NRRS- I3:** this workflow will need to address Road/Route dynamics and 5R(s)
- **(4 NRRS- I4:** this workflow will need to address **Advanced safety needs and 5R(s)**
- (like air quality, unregulated climate intolerance, temperature/humidity, road system or road or terrain safety, with more than an expected driving style for commuting with safety, reliability & timing and with more than programmed gear changes, or braking or drive distribution between the front and rear wheels as expected in 4WD modes)
- The bulletin looks at the different assistants that can help a commuter's 5R(s). The editions that follow will delve into details of each of them to help a commuter/stakeholder ramp up scores in a dashboard

Dashboarding Road Safety/Support

- The DRSS Data Analysis Channel Building for an **automobile manufacturer's quality assurance, driver fitness, vehicle fitness, driving conditions dimensioning, and road system responsiveness** for deteriorating or changing driving conditions dimensioning of the needed SMART(ness for safer commuting will need to
- **1. Improve Sensitization and Awareness for Road Safety**
- **2. Develop issue/feedback/data channelization for safer commuting**
- **3. Provide handbooks/guides/planners for such planning/ incorporation**
- **4. Promote quality for road safety and infrastructure via NSSR guided methodologies like the training programmes/monthly bulletins & quizzes/dashboarding of experience or incidences**

DRSS Lifecycle and
NSSR RS Teamwork for
the DRSS Workflows

DRSS Data Analytics
and
Drive Performance
SMART(ness)



Road safety and Accountability Dashboard for the Year 2026

- ☐ Certificate of Excellence YES / NO / NOT SATISFACTORY
- ☐ Traffic issues or incidences YES / NO / NOT SATISFACTORY
- ☐ Compliance with FMVSS standards YES / NO / NOT SATISFACTORY
- ☐ Onboarding of NSSR Road Safety objectives YES / NO / NOT SATISFACTORY
- ☐ Upgradability of NSSR Road Infrastructure objectives YES / NO / NOT SATISFACTORY
- ☐ Traffic Engineering Assets planning YES / NO / NOT SATISFACTORY
- ☐ Traffic Engineering Defects Liability YES / NO / NOT SATISFACTORY
- ☐ Improved on-road assistance YES / NO / NOT SATISFACTORY
- ☐ Cost of Quality /Cost of Poor-Quality Project Assistance YES / NO / NOT SATISFACTORY
- ☐ Complexity for Road Safety and Accountability YES / NO / NOT SATISFACTORY



Road safety and Accountability Dashboard for the Year/Season 1

- ☐ Certificate of Excellence YES / NO / NOT SATISFACTORY
- ☐ Traffic issues or incidences YES / NO / NOT SATISFACTORY
- ☐ Compliance with FMVSS standards YES / NO / NOT SATISFACTORY
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Road safety and Accountability Dashboard for the Year/Season 2

- ☐ Certificate of Excellence YES / NO / NOT SATISFACTORY
- ☐ Traffic issues or incidences YES / NO / NOT SATISFACTORY
- ☐ Compliance with FMVSS standards YES / NO / NOT SATISFACTORY
- ☐ Onboarding of NSSR Road Safety objectives YES / NO / NOT SATISFACTORY
- ☐ Upgradability of NSSR Road Infrastructure objectives YES / NO / NOT SATISFACTORY
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- ☐ Improved on-road assistance YES / NO / NOT SATISFACTORY
- ☐ Cost of Quality /Cost of Poor-Quality Project Assistance YES / NO / NOT SATISFACTORY
- ☐ Complexity for Road Safety and Accountability YES / NO / NOT SATISFACTORY



Road safety and Accountability Dashboard for the Year/Season 3

- ☐ Certificate of Excellence YES / NO / NOT SATISFACTORY
- ☐ Traffic issues or incidences YES / NO / NOT SATISFACTORY
- ☐ Compliance with FMVSS standards YES / NO / NOT SATISFACTORY
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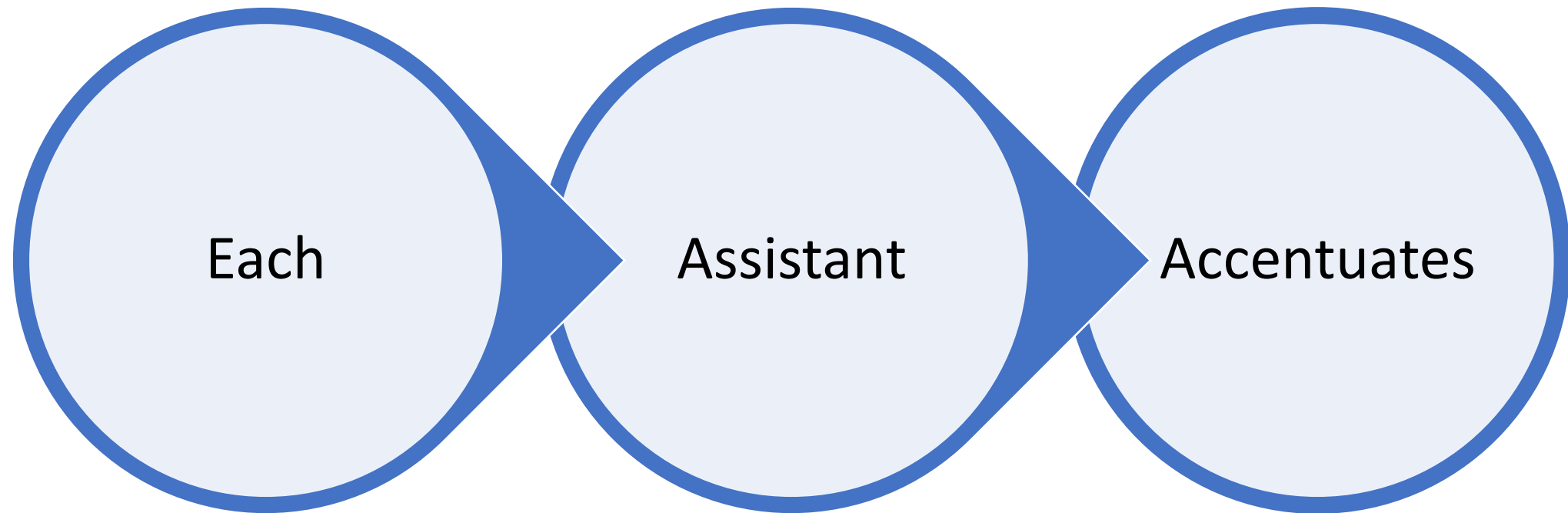


Road safety and Accountability Dashboard for the Year/Season 4

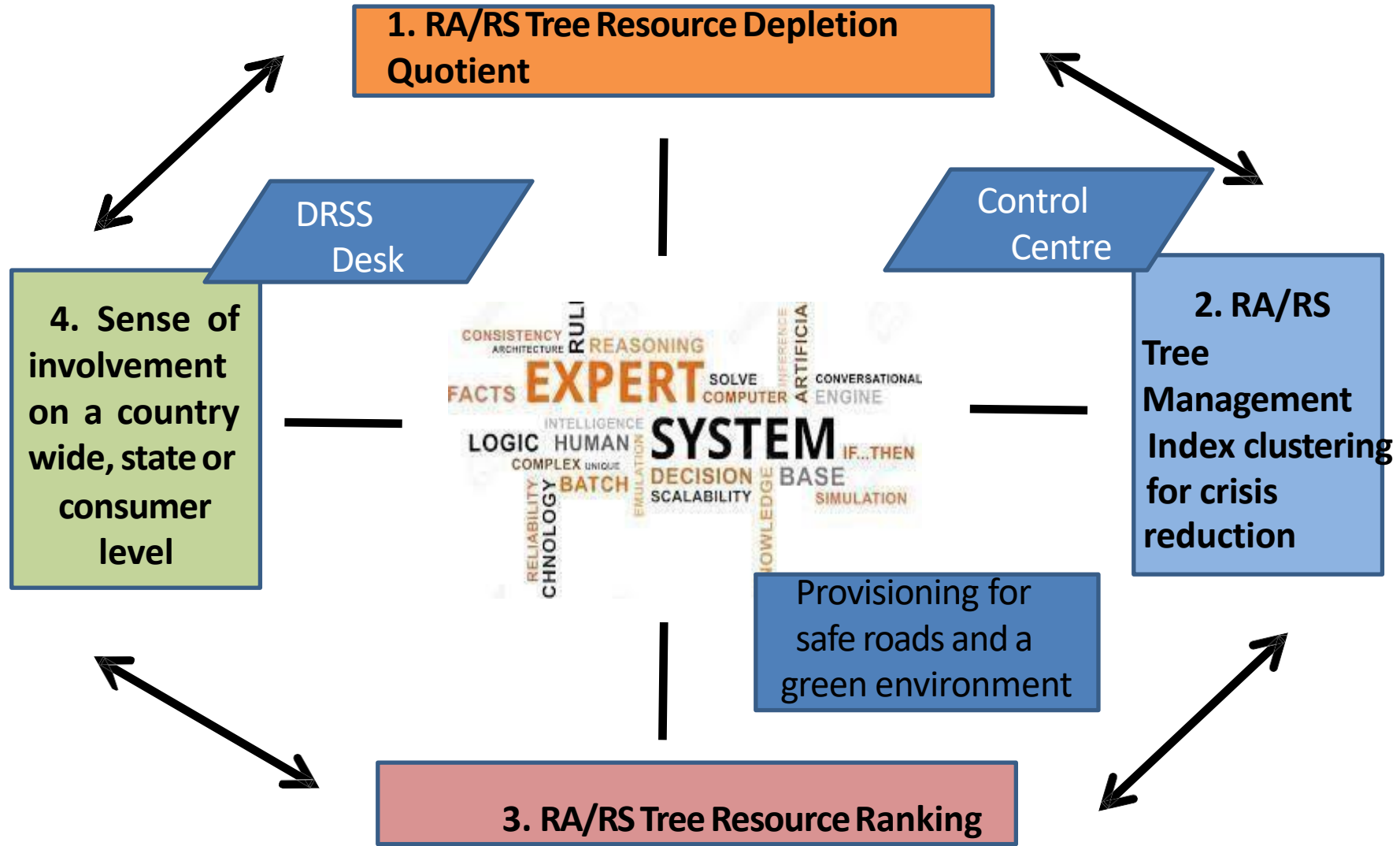
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DRSS Assistants – Road Arboriculture and CCMA

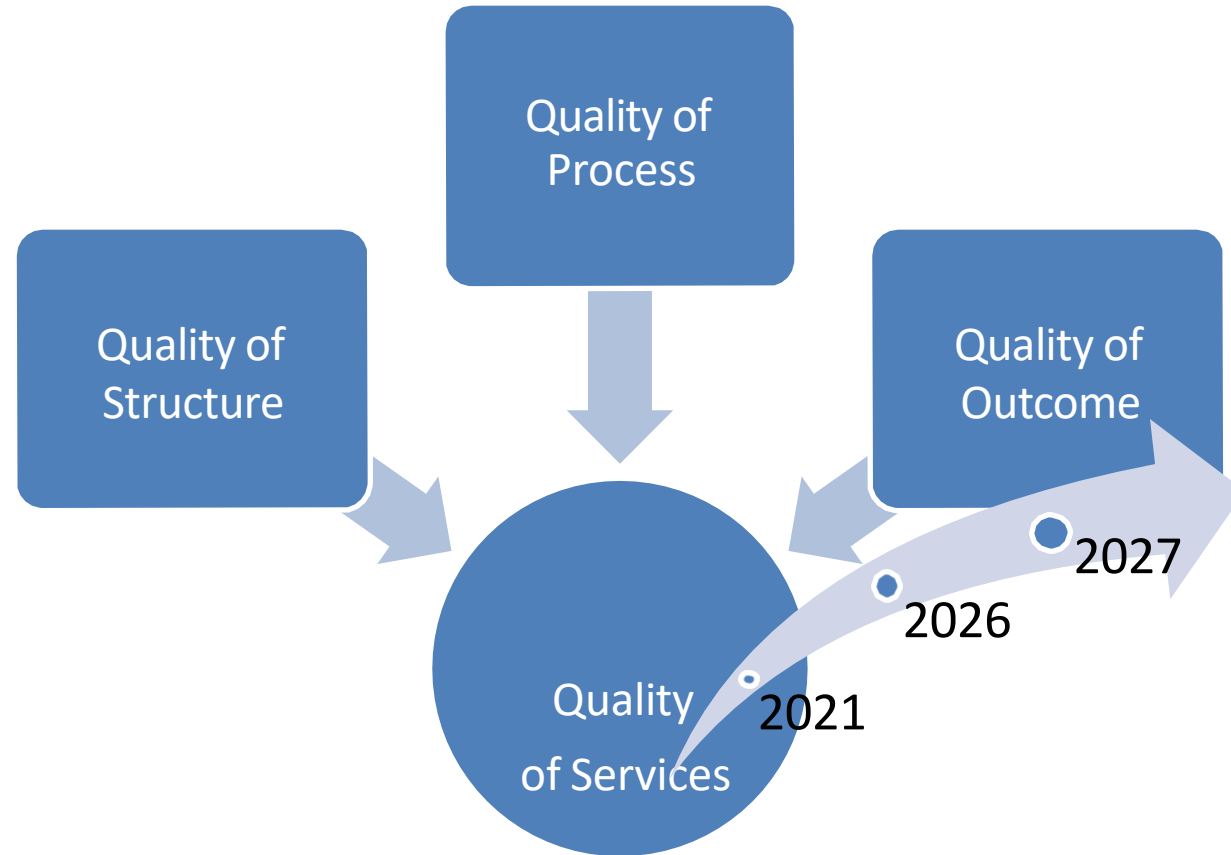


Mainline Tree Crisis Reduction



TMI: Tree Management Index, TMQ: Tree Management Depletion Quotient and TRR: ²⁸ Time Resource Ranking with Road Arboriculture and Road Safety in mind

Incidence Mitigation and Adaptation



Gap Analysis for Incidence Mitigation and Adaptation

1. Is the MTCR model agile to serve sudden incidence response for disasters, climate change related risks, threats, air quality related health hazards, illegal cutting down, felling, smuggling or theft incidences, complaints etc? Yes / No
2. Are all cases put through complete case analysis & incidence management practices to ensure Road Arboriculture and Crisis Reduction (MTCR)? Is any assessment reported at the earliest? Yes / No
3. Are all events or incidences or complaints assessed to understand root causes and TMI, TMQ and TRR indicators? Yes / No
4. Are efforts put in to reduce further incidence or complaint occurrences? Yes / No
5. Are MTCR diagnostics and consultations assessed periodically for problems in effectiveness? Yes / No
6. Are MTCR diagnostics and consultations assessed periodically for deviations from norms or root cause practices? Yes / No

Gap Analysis for Incidence Mitigation and Adaptation

7. Are census control & self-corrective solutions periodically put through preventive or mitigative assessments and quality checks? Is proactive critical path management in place to ensure their availability? Yes / No

8. Is gap analysis done periodically, to assess practices adherence and quality levels for areas important to ensure best results for green ecosystems, MTCR sufficiency and sustainability for the bio-cluster? Yes / No

9. Is a post-mortem (of TMI, TMQ & TRR indicators and lifecycle theory) done for important cases to understand what could have been done better? Yes / No

10. Are contacts, availability and preferences of MTCR consultants, experts, personnel in MTCR hub deployments confirmed or updated on a periodic basis? Yes / No

11. Are there alternate strategies to help MTCR solutions when there are unforeseen impactful changes or uncontrollable situations? Yes / No

Climate Change Mitigation and Adaptation (CCMA)



- **Assessment of the Age of a Tree (by observation that is based on details available on the Internet)**
- 1. Count the number of **growth rings** (possible only when the tree is felled or cut). Every year a tree adds a new ring of tissue as its trunk grows outward
- 2. Count the number of **tree whorls** (that is the number of largest branch whorls) and add 1 to the number
- 3. Measure **diameter of circumference of trunk** at an average man's chest height & **multiply this value by the growth rate** of the species

Climate Change Mitigation and Adaptation (CCMA)



- **Assessment of the Age of a Tree (continued)**
- 4. Use an **increment borer** (to be done only by an arborist) to **remove a cylindrical portion** of the trunk near the base or below an average man's chest height. This portion can be used to count the growth rings.
- Importantly, care must be taken to help the tree heal or grow unaffected after the use of any method to estimate the age of the tree.

Climate Change Mitigation and Adaptation (CCMA)



- **Assessment of the Age of a Tree (continued)**
- 5. Maintain a Tree Grid that **records the date and time of planting of any sapling or seed** with details that help know more about the plant or tree at any later point in time. This could be used to decide whether the tree should remain at its location or be shifted to a different location or even be put to other use. This may become important in the future when climate change could become more severe leading to alternate cycles of floods and drought, thereby affecting a region's tree cover.

Climate Change Mitigation and Adaptation (CCMA)



- **Tree Hazards Assessment Report (a checklist that is easy to understand and use)**
- 1. Is the tree drought tolerant? If no then this is a hazard as it needs sufficient water and soil enrichment.
- 2. Do many branches arise from one point of the trunk?
- 3. Is the tree sensitive to anything (question is arborist specific)? If yes, then review items 8 to 11.
- 4. Are there large dead branches?

Climate Change Mitigation and Adaptation (CCMA)



- 5. Are there detached large branches hanging from the tree?
- 6. Does the tree have cavities or rotten wood along the trunk or in major branches?
- 7. Are mushrooms present at the base of the tree?
- 8. Are there cracks or splits in the trunks or where the branches are attached?
- 9. Have any branches fallen from the tree?
- 10. Have adjacent trees fallen or died?

Climate Change Mitigation and Adaptation (CCMA)



- 11. Have the leaves developed a premature unusual color or size?
- 12. Have the roots been broken off or injured or damaged by lowering the nearby soil level, or by constructing or repairing pavements or sidewalks, or by digging trenches for telephone cables or sewer systems?
- 13. Has the location or site been changed recently by construction activity or by soil level changes or by installing of lawns or green strips?

Climate Change Mitigation and Adaptation (CCMA)



- 14. After stump removal was the hole filled with top soil before any new plantation? If no then the roots may not be healthy.
- If the answer is yes to any of the relevant questions, then the tree can be a hazard.
- A citizen, entity or civic body interested in registering a tree in the grid, will need to enter the following “Tree identification & configuration details” via a call to the Tree Health Desk, or submission of a hand-filled form, or use of a mobile application.

Climate Change Mitigation and Adaptation (CCMA)



Tree Identification and Configuration Details

- **Road System name: Road System Id:** (OR)
- **PI/F name: DRSS PI/F Id:**
- **Tree-variety or friendly name:**
- **DRSS Tree Grid Id:**

Route edition:

Climate Change Mitigation and Adaptation (CCMA)



- **Estimated Age (in years by observation+):**
- **Estimated Height (in meters or feet):**
- **Type of Branching:**
- **Summary of condition or history:**
- **Enclosed picture (if any in mobile friendly formats): Yes/No**

Climate Change Mitigation and Adaptation (CCMA)



- **Soil type: (Choose from:)** Normal hard dry soil/Normal dry soil/Wet soil (due to presence of subsoil water or surface water)/Black cotton soil/Alluvial soil/Red laterite soil/Sandy soil/Fissured rock/Hard rock
- **Soil details:**

Climate Change Mitigation and Adaptation (CCMA)



- **(CRZ) Critical Root Zone details** (also known as drip line or an imaginary circle around the tree till where the canopy or branches seem to spread) - This is important to estimate the spread of the roots of the tree:
- **Nature of concrete work around tree:**

Climate Change Mitigation and Adaptation (CCMA)



- **Clearances around tree:**
- **Overhead clearances:**
- The solution also permits the logging of a maintenance schedule for the tree being included in the grid.

Climate Change Mitigation and Adaptation (CCMA)



- **Inspection or Maintenance schedule (tabulation):**
- **DRSS Log date:** **DRSS Log Id:**
- **Carried out by:**
- **Details of work carried out (to be filled as relevant to the case)**
- **(a) Visual inspection (tick as applicable)**
- **[] Tree Hazards Assessment (this checklist can be improved as per CRZ and related conditions)**
- **Details:**

Climate Change Mitigation and Adaptation (CCMA)



- **(b) Closer inspection by expert (tick as applicable)**
- ☐ Diagnosis of tree and landscape problems
- ☐ Insect and disease identification and management
- ☐ Variety specific Hazard Assessment and Surveys
- **Details:**

Climate Change Mitigation and Adaptation (CCMA)



- **(c) Preventive maintenance details (tick as applicable)**
- ☐ Training or Controlling growth patterns
- ☐ Eliminating branches and/or limbs that are dead, detached, rubbing each other or touching cables, lines
- ☐ Removing limbs that are diseased or insect infested
- ☐ Tree pruning
- ☐ Coppiced* ☐ Pollarded*

Climate Change Mitigation and Adaptation (CCMA)



- **What is the meaning of Coppiced?**
- Most of the tree is removed to ensure safety and health

- **What is the meaning of Pollarded?**
- The trunk is left intact but the top branches are removed

Climate Change Mitigation and Adaptation (CCMA)



- **(d) Restoration details (tick as applicable)**
- () Installing support systems (cables and braces after expert evaluation)
- () Improving shape or silhouette of tree
- () Mulch delivery (mulch is recycled wood cut into chips, on the addition of a 2-4 inches of a mulch covering the root zone of a tree, there is more healthy root development)

Climate Change Mitigation and Adaptation (CCMA)



- **(d) Restoration details (tick as applicable)**
- () Planting ground coverings, shade tolerant plants, grasses that increase organic matter content of soil
- **Details:**

Climate Change Mitigation and Adaptation (CCMA)



- **(e) Risk mitigation details (tick as applicable)**
- () Creating better structure to “better wind resistance and reduce adverseness of storm damage”
- () Removing branches or thinning to increase light generation

Climate Change Mitigation and Adaptation (CCMA)



- **(e) Risk mitigation details (tick as applicable)**
- () Guided pruning/cutting/topping (as confined to need)
- **Details:**

Climate Change Mitigation and Adaptation (CCMA)



- Safety advisory (to be filled as relevant to the case):
- (a) Dos



Improved Accountability

- A DRSS reporting entity will be issued a ticket that summarizes what needs to be done or will be done to mitigate risk or adverse outcome.
- This ticket becomes a point of incidence for the civic authorities and arborist team to understand the issue and to plan remedial action.
- The ticket's status will remain open (for the DRSS Desk/Control Centre/anyone interested in tracking the same) till there is satisfactory resolution of

Helping out



- A DRSS reporting entity can also be given a recommendation to share details and findings with others (prone to be afflicted) in the neighborhood or zone to help sustain this initiative.
- The DRSS team could choose to release certain news & social media based advisories, announcements, hoardings, signages and knowledge aids to help improve the sensitization, awareness and involvement of related entities, communities or citizens by large.

Helping out



- Tree Health Desk advisory (Will be notified by the DRSS Desk team)
- () Trees cannot be planted in this region
- Details on restrictions:

Helping out



- Tree Health advisory (Will be notified by the DRSS Desk team)
- () Permission required to plant trees in this region
- Details on precautions:

Helping out



- Tree Health advisory (Will be notified by the DRSS Desk team)
- () Stay off nearby road/stretch/route/ring road at particular times
- Details on timings:
- () Stay off nearby road/stretch/route/ring road in particular months
- Details on months:

Helping out



- Tree Health advisory (Will be notified by the DRSS Desk team)
- () Recommend minimal utilization
- () Restricted for goods carriers
- () Restricted for heavy motor vehicles
- () Restricted for autos
- () Restricted for 2-wheelers
- () Restricted for pollution accelerators
- () Connects or connected to bad roads or problem afflicted routes

Helping out



- **Tree Health advisory (Will be notified by the DRSS Desk team)**
- **() Not to be used by Emergency Response vehicles (like ambulances, fire engines)**
- **() Not to be used by Special Needs vehicles (like VIP convoys, on-mission security vehicles, hazardous content tankers, water tankers, school-or-college vans or buses)**

Helping out



- Tree Health advisory (Will be notified by the DRSS Desk team)
- () Not to be used by two wheelers or cyclists
- () Not to be used by pedestrians



Zen for the environment



By K.S.Venkatram
AOEC, 2018-2025-2026



Provisioning for a
green environment

Zen for the environment

- Since 1970, Bengaluru's land growth or concretization has increased by 925%
- The ratio of the number of trees per person has severely dropped leading to an increase in air pollution and climate change trends
- According to a study, every person needs at least 8 trees in a lifetime, whereas there is approximately 1 tree for approximately seven persons
- There is a need to come up with action plans to address this loss of green cover
- AOEC proposes a programme called "Zen for the environment" to address this problem and its need for risk mitigation

Zen for the environment

- The consultant finds that the proposed programme will be more successful if assisted by the BBMP, Nursery Men Society, Lalbagh, Bengaluru
- The programme will include the following steps
- 1. **Zen for sites:** Launch a DRSS remedial initiative that mandates when builders & construction companies clear land for their construction projects, they should be provided 8 saplings (per flat, office or home constructed at the site in question). It will be a responsibility for a builder or associated owners to plant and care for these saplings in an exercise to make up for any deforestation done.
- **Decision making:** Selecting saplings that are suitable and designing a “handbook” that helps an average person care for and know the health of a tree
- **Deliverable:** Ready-to-plant saplings and Zen for the environment booklets



Zen for the environment



- **2. Zen for families:** Launch a DRSS **lifetime initiative** that mandates when a child is born, a family or new parents should be provided 8 saplings to plant and care for these saplings in an exercise to help the child fight climate change and concretization.
- **Decision making:** Selecting saplings that are suitable and designing a “handbook” that helps an average family care for and know the health of a tree
- **Deliverable:** Ready-to-plant saplings and Zen for the environment booklets

Zen for the environment



- **3. Zen for municipal bodies:** Launch a DRSS sustainable environment initiative that mandates whenever the municipal body cuts down a tree or reduces its lifetime, it should plant 8 saplings and care for them in an exercise to make our environment sustainable and green.
- **Decision making:** Selecting saplings that are suitable and designing a “handbook” that helps the municipal implement a “Tree Grid” to inventory, track, care for and know the health of trees in select locations
- **Deliverable:** Ready-to-plant saplings, “Build a Tree Grid” and “Zen for the environment” booklets

Zen for the environment



PROJECT TREE



- **4. Zen for parks and gardens (lung spaces):** Launch a DRSS rejuvenate the environment initiative that mandates whenever a municipal body plans for or maintains a park or garden, it should implement the “Tree Grid” in an exercise to conserve and rejuvenate the environment.
- **Decision making:** Recommending saplings of plants, trees, herbs that are suitable for a location and implementing of the “Tree Grid” to inventory, track, care for and know the health of trees in the park or garden
- **Deliverable:** Ready-to-plant saplings, “Build a Tree Grid” and “Zen for the environment” booklets

Zen for the environment



- **4. Zen for lakes and ponds (care for our water bodies):** Launch a DRSS nurture me initiative that mandates whenever a municipal body resurrects or maintains a lake or pond, it should arrange to plant trees on the perimeters of the lake or pond, landscape it and implement the “Tree Grid” in an exercise to protect this resource.
- **Decision making:** Recommending saplings of plants and trees that are suitable for a location and implementing of the “Tree Grid” to inventory, track, care for and know the health of trees in the park or garden
- **Deliverable:** Ready-to-plant saplings, “Build a Tree Grid” and “Zen for the environment” booklets

Zen for the environment



- **5. Zen for your kitchen (health and well-being):** Launch a DRSS health for all initiative that recommends that families should plan to grow a kitchen garden of select herbs if they are interested in growing plants and trees.
- **Decision making:** Recommending saplings of plants and herbs that are suitable for a family & its location and implementing of the “Herb garden accelerator ” to families achieve wellness and even productize if necessary
- **Deliverable:** Ready-to-plant saplings, “Grow your Zen or Herb garden” booklets

Zen for the environment



- **6. Zen in your workplace (caring for your workforce or staff):** Launch a DRSS **care for your workforce initiative** that recommends that organizations or institutions should plan to grow a Zen garden of select plants, herbs and trees with specific landscaping to bring Zen (inner peace and harmony) into the lives of people at work there.
- **Decision making:** Recommending saplings of plants, herbs and trees that are suitable for a workplace & its location and implementing of the “Zen garden healer ” to help workplaces add soulful and healing influences to their environments
- **Deliverable:** Ready-to-plant saplings, “Grow your Zen garden” booklets

Zen for the environment



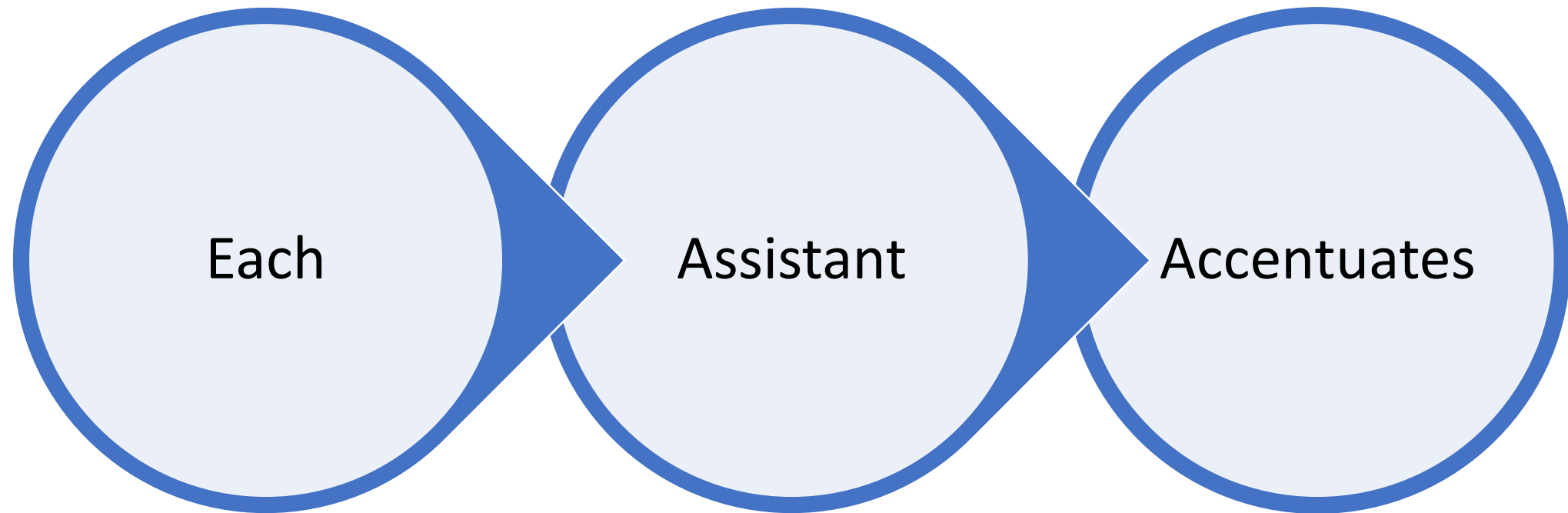
- **7. Zen in nature conservation (caring for flowers):** Launch a DRSS **care for flowers initiative** that develops methodologies to use dried or discarded flowers that need conscious decision-making for conservation, where the methodologies include a framework that includes a flower species, hybrid or variety into the nature conservation initiative, defines the artwork to use the dried or discarded flower in meritorious & sustainable environment solution finding prizes/awards/medals/certificates/winner cups/etc awarded to students, sustains the species by creating a postage stamp, designs a flashlight view to its evolution and conservation.
- **Decision making:** Recommending flowers of plants, herbs and trees that are helpful to “man, habitats, workplaces, gardens, and associated environments”
- **Deliverable:** Artwork, postage stamp, flashlight view of species/hybrid/variety

Zen for the environment



- **The way ahead**
- Increasing population will necessitate more land use or concretization, thus helping people plant and care for plants and trees will become a vital endeavor. The DRSS project can help develop interest and remedial thinking for this.
- (1) Building Tree Grids, (2) Designing Zen and Herb gardens and (3) Mitigating risks of tree fall associated with trees in our neighborhoods or locations are all steps towards a Sustainable Future (or Future ready Millennium)

DRSS Assistants – Road Arboriculture and CCMA



Quiz

DRSS
Assistants –
Road
Arboriculture
and CCMA

