

Treating Waste as a Resource

Metro Vancouver Waste Management Committee

Principles from Sweden

Integrated Resource Management

Opportunities for Canada

Stephen Salter, PEng
March 12, 2008



Waste planning is community planning



Stockholm's Henriksdals treatment plant

Use each resource for its highest value



The biogas upgrading plant...

...provides biogas for inner-city buses,



... and for the Hammarby Sjöstad development,



...where kitchen waste is collected for treatment.



Integrated Resource Management

Principles

Closed cycles are profitable

Every "waste" is a resource

Each has a best use and highest value

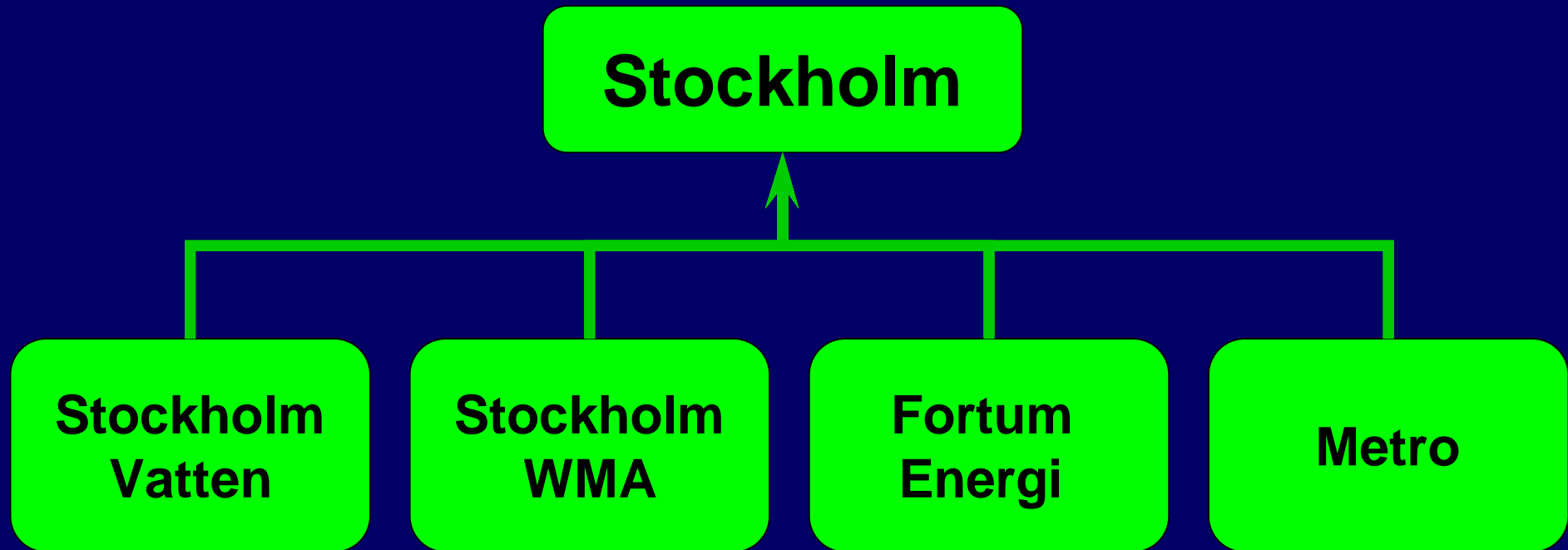
Look for revenues first, costs second

Integration solves many problems at once



Integrated municipal planning

Swedish for common sense

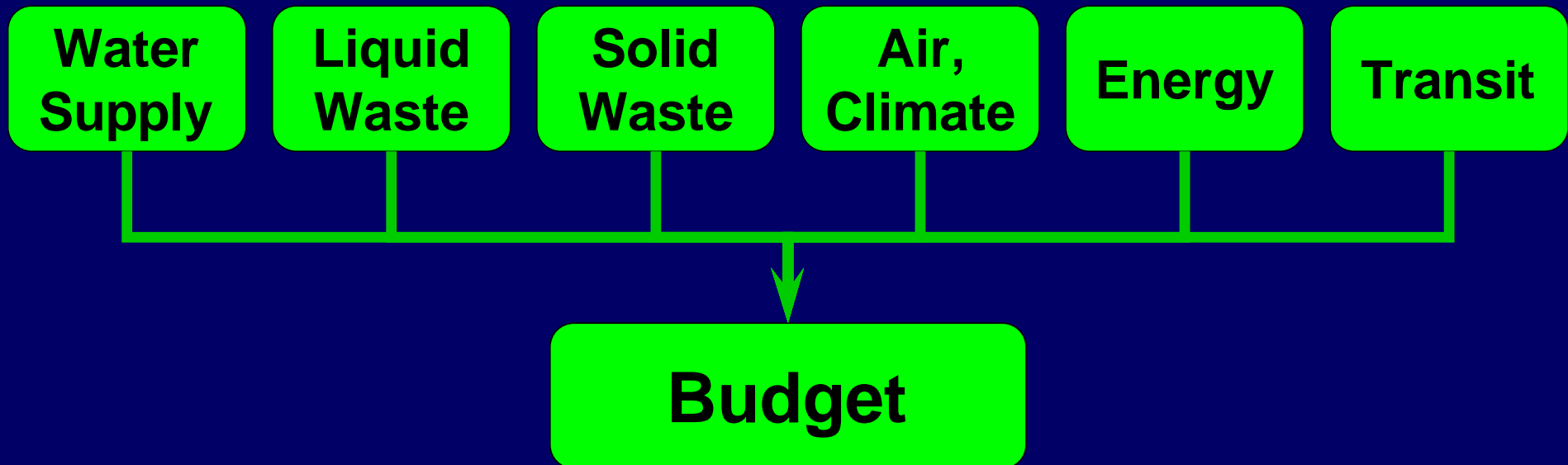


"Waste and refuse are resources in the wrong place."

City of Stockholm

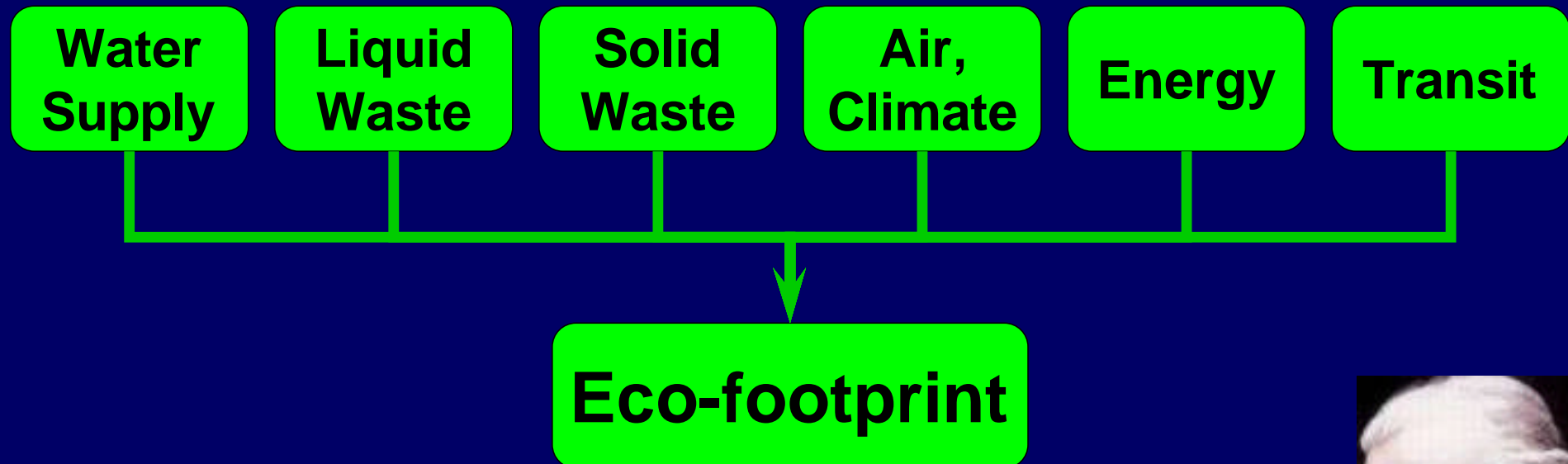
**In the administrative world,
the issues seem separate**

Separate goals, staff, and budgets



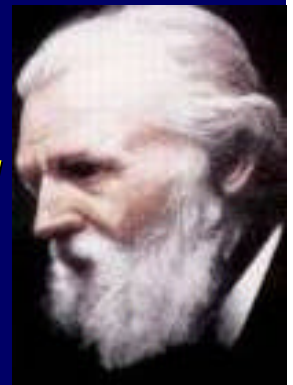
In the physical world, solutions are connected

Common problems, impacts, and solutions



*When we try to pick out anything by itself, we find
it attached to everything else in the universe.*

John Muir, 1892



Integrated Resource Management

Concept Team

Jon O’Riordan, Ph.D.

(governance & regulations)

Chris Corps, B.Sc., MRICS

(valuation & financials)

Patrick Lucey, M.Sc., R.P.Bio.

(water & ecology)

Stephen Salter, PEng

(resource recovery & greenhouse gases)

Integrated Resource Management

Concept Questions

Would Integrated Resource Management:

- **Have a strong business case**
- **Work in British Columbia cities**
- **Support Climate Action:**
 - **GHGs - 33% by 2020**
 - **Carbon-neutral electricity by 2016**
 - **Government to be carbon neutral by 2010**

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Potential Outcomes

An integrated approach to waste may:

- **Reduce community GHGs by 25%**
- **Pay for itself with revenues from:**
 - **biofuels for cogeneration, buses, cars**
 - **electricity, heating, cooling**
 - **reclaimed water**

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Feedback

"I conclude that this IRM plan is conceptually sound and on the right track, and if implemented it would likely provide a model of great value to countless municipalities throughout the world."

Dr. Charles McNeill

United Nations Development Program

February 11, 2008

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Conclusions

- In a traditional silo approach, it can be harder to minimize costs and to maximize benefits
- In an integrated approach, it can be easier to optimize benefits for the community



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Can integrate further

Why not...

- Divert wet organic waste to sewage plant digesters, instead of compost?
- Upgrade existing digesters to increase biogas production?
- Consider the highest and best use for biogas, e.g. as vehicle fuel?



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Can integrate further

Why not...

- Divert dry organic waste to gasification, for example at the Burrard Thermal plant?
- Plan new sewage plants using an IRM approach, e.g. locating small plants near clients for energy and water?



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Can ask resourceful questions

- **What if instead of minimizing cost alone, we maximize all revenues?**
- **Why would we give away a resource like solid waste?**
- **Why should we delay treatment plants which can reduce our costs?**

More information

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