26B MORE ON APPROPRIATE TECHNOLOGY

"Appropriate technology," according to Victor Papanek, is "technology suitable to the ecological, human, financial, and material resources which exist in a given area." [1]

Factors to consider:

- Economic needs-overall standard of living
- Psychological needs – involve the community to help meet their needs
- Physical needs-food, clothing, shelter
- Spiritual needs –ultimately, this is essential
- Technological needs- improve overall technology base
- Intellectual needs-ability to learn and become self-sufficient

Guidelines: [2]

- Designs must "fit" with the setting. (There are more ways to do things than the traditional American way.)
- Be careful of cultural taboos and language misunderstandings.
- Make the results look good as well as being appropriate to the setting.
- Bring compassion for people.
- Use frugality, practicality, and common sense.

Water supply:

- Rivers, streams, lakes
- Collected rainwater
- Water wells/drilling

Approaches [3]

Water Purification:

- Filters
- Chemicals
- Reverse osmosis
- Distillation

Water distribution:

- Electric pumps
- Ram pumps
- Canals
- Cisterns

- Pipes

Energy sources:

- Solar power
- Hydro power
- Wind power
- Biogas
- Fossil fuels

Sources of information:

- World Health Organization
- Food for the Hungry
- Compassion International
- US Peace Corps

Checklist for A/T projects for the developing world [4]

These criteria are assumed to be important to any project that is interfacing with an established culture. Many times the stable culture must be made unstable, a change infused, and the culture reestablished. Most often change is resisted, and all resistance has a reason behind it.

These criteria re not of equal importance, but will provide an understanding of the suitability of an appropriate technology project. (Each may be rated on a scale of 1 to 10.)

Local Environment

1. Fit with environment -Compatibility with the local ecology.
2. Fit with culture -The development can be integrated within the local history, philosophy, culture, priorities, and values.
3. Local ownership –There is in place an adequate local infrastructure that will assume responsibility for any formalities and the execution of the project.
4. Future- Any relevant research will lie in a direction leading to new initiatives that are constructive and independent.
5. Labor –The project is relatively labor intensive, creating jobs by using techniques that guarantee extensive use of manual labor.
6. Artisans- Local craftsmen are sufficiently available with appropriate tools.
7. Cooperation- The project supposes that people can and will work together to bring improvement to their communities.

Production Process

1. Economic- The alternative is economically viable, small enough to be affordable by a single family unit, with recognizable long-range financing.

2. Local resources- The project can be carried out within the capacities, materials, and resources locally available.
3. Local support – Support is available to monitor the project, deal with required technology, and provide any necessary repairs.
4. Simple and inexpensive – The project is characterized by simplicity and requires only a small amount of capital.
5. Size – The end-result is small enough to be produced in a village or small workshop.
6. Flexibility- There is sufficient flexibility to allow adaptation to new conditions or unforeseen difficulties.
7. Decentralized- The project is characterized by small units of decentralized production.
8. Quality – Any products produced must be of good, competitive quality.

Economic Independence

1. Local people should be freed from dependence on foreign resources.
2. Local talent- Contact with modern industrial nations should occur only when they favor the use and development of local resources and talent.
3. Cushion- The effort should provide a cushion against outside economic changes.
4. Transport – The project should minimize the transport of goods.

Project Selection (Kevin Passino): [5]

Project selection involves combining the following information and deciding what project to start:

• Project goals, specified in terms of outcomes, not technologies (e.g., specify improvement of health, not a specific water filtration technology, as the specific technology is chosen or designed if you decide to try to improve health by improving water quality).

• Information gathered from the community on needs, resources, capacity, aspirations, and priorities.

• Engineering technical assessment of the community.

• Level and type of participation by the community and engineering team.

• Project-related constraints (e.g., time, money, resources, and types and levels of team skills).

• Risks of project task failures.

Community Technology [6]

Lack of community-wide or country-wide (e.g., rural or urban slum) infrastructure is often the driver for these technologies. Water filtration, sanitation, energy generation, and transportation (a "village truck" for taking agricultural products to market or for moving water) can all be approached from a community (group) perspective by seeking technologies that meet the needs of multiple individuals rather than just one. In some contexts it may make more sense to address basic needs by doing so for an entire community together, rather than each individual in the community (e.g., for cost per person reasons and a desire to have wider impact).

A community technology approach has many advantages:

• It is naturally inclusive if executed properly;

• It hopefully improves conditions uniformly and hence does not create inequalities and bad feelings in a community where one person has an advantage over another;

• It often promotes the idea of sharing and cooperation and therefore not only empowers individuals, but also the entire community's functionings;

• It may offer lower cost and less negative environmental impact per person;

• It may be more reliable if effective group operation and management strategies are used; and

• It also has technical advantages in some cases, such as centralizing a solution and having the resources to make that solution perform better (e.g., in water filtration maintaining more consistent reduction of contaminants, in electricity generation providing a more reliable source that does not periodically shut down, or in agriculture via community fields/gardens).

Of course, in some cases it can be much more difficult to succeed in a communitywide participatory development project as the objectives then often include infrastructure development (e.g., laying pipe, installing a large water storage tank, or stringing wire). Challenges also include acquiring initial development funds and putting in place approaches to operate and maintain the community technology…

References

1. Papanek, V., *Design for the Real World*, Chicago Review Press, 2005.
2. Titus Crabb, "Appropriate Technology," a seminar presented at LeTourneau University (1988).
3. Ibid.
4. Developed by Russell Primrose, February, 1988.
5. Passino, K., *Humanitarian Engineering*, Bede Publishing, 2016, p. 504.
6. Passino, p. 543-544.