Visionary National Economic Planning: Plans, Potentials and Progress*

Graham T.T. Molitor
Public Policy Forecasting
USA

Introduction: Taking Charge of Change

The tide of most human endeavors and outcomes are subject to conscious direction. That is what economic development policy and planning is all about – taking control, providing a sense of direction, specifying goals, and mapping ways to fulfill goals. It comes down to some manner of more rational, more logically arrived at consensus regarding national priorities and goals that control destiny.

The tendency to merely go along as passive victims of crucial change is waning. The slow drift of haphazard trial and error, free play of market forces is being displaced. Policy makers increasingly are undertaking foresight activities to affect change, not merely be affected by it. Policy planners are coming into their own and assuming new roles as architects of destiny, not its captives. Explicit planning embracing and encompassing national economic development is also coming into its own. There is a growing awareness of pace-setting and dramatic successes along these lines. Such accomplishments encourage others to consider similar national economic development approaches.

Many lenses and levels of analysis can be brought to bear to scan the horizon. Reasoned balance of perspectives is essential to successful endeavors. Too brief a timeframe may be short-sighted. Too narrow coverage may suffer from tunnel vision. Too broad review of the entire landscape also may be self-defeating. Though seeing far enough into the future might never be clear enough to satisfy everybody, there is no reason why efforts shouldn't be undertaken.

Singapore's Exemplary National Economic Development Success

Singapore's extraordinary "rags to riches" success story dramatically highlights the tremendous potential of scientific and technological foresight planning. Singapore has accomplished what may be the most rapid and balanced rise to global socio-economic prominence ever.

Until recently, Singapore was a relatively impoverished island nation. Directed development and incentives catapulted this tiny nation to world leadership positions in economic growth sectors

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important to the future. Currently, this small nation has consistently ranked among the top five countries worldwide in terms of GDP per capita!

Singapore accomplished its miraculous economic development from a starting point of being a relatively minor third world nation. Against the enormous odds of being orphaned from Great Britain's Empire and from Malaysia, and still struggling to recover from the devastation of WW II Japanese occupation, this beleaguered nation managed to transform itself into cutting-edge global leadership positions. Rising from war-torn shambles and Third World status was not the result of luck or fate. The crucial element in Singapore's single-minded determination entailed targeting emerging economic engines of growth underpinning the long-range future. Singapore's success entailed recasting its economic base into centers for innovation and development upon which the global economy will be premised in the years ahead. National economic planning efforts, above all else, forged this small nation into an exemplary champion of "techno-entrepreneurship."

Singapore's notable and impressive successes have been duly recognized by many counts and measurements. Recent "globalization" surveys (based on nine measures, including trade as percent GDP, foreign direct investment, percent using internet services, number of minutes of international calls, etc.) provide one measure of success. Rank order of nations surveyed by these measures: Singapore #1; Netherlands #2; Sweden #3; Switzerland #4; U.S. #12. Business Week magazine's listing of the five most competitive economies provides another determination of prowess. For 2002 the rank order was: U.S.; Finland; Taiwan; Singapore; Sweden. From a starting point of impoverishment and economic insignificance, the country's economic position currently ranks (per capita) among the highest in the world.

How is it that a miniscule nation – 253 square miles in size populated by 4.3 million persons – rates as a pace setter among the "giants"? This amazing accomplishment was not a result of mere happenstance. This accomplishment came about largely as a result of visionary economic planning and steadfast determination. Singapore's remarkable accomplishments stand as a powerful model for others.

Championing Tomorrow's Economic Linchpins Today

Selected undertakings consciously strive to stake out state-of-art advantages associated with leading-edge technologies. Singapore's Ministry of Science and Technology planning efforts spearheaded high value-added, knowledge-based potentials inherent in promising emerging economic sectors.

A major focus targets bio-medical development. Why? Singapore's spokespersons simply assert: "...because people always get sick." Other undertakings focus on stem cell research, genomics, bio-informatics, and biochips. Tending to matters close to home, another bio-medical emphasis is dedicated to controlling diseases rampant throughout SE Asia.

Other promising hi-tech targets include: language processing; optical recognition; photonics/optics; nanotechnologies (nano-film – carbon and silicon based); wafer fabrication; semi-conductors; wireless devices; automation; enhanced processes (communications, wireless); new designs; intelligent roadways and advanced transportation

systems. Growth potentials inherent in all these areas are integral components of future economic progress. These targets are impressive and constitute a forward looking "wish lists." All of these undertakings are within the scope of the emerging "Big Five" Economic Eras that will dominate the future.

One more area of importance should be added to this list: leisure-based enterprise. To be sure, Singapore does cater to international tourism, and millions of visitors do come. More significant is on-going negotiation to snare the largest-ever casino-based resort – a $3.5 billion concept pursued by Las Vegas Sands. All things considered, the growing economic importance of the Pacific Rim area make high-stakes games of chance an obvious growth area. We stand at the dawn of an impending "Leisure Era" – commencing around 2015 (in the U.S.), when over 50% of American's lifetimes will make time available for pursuing such interests.

Singapore also created favorable climates for cutting-edge technologies that are not quite dominant but bound to become the bastions of important jobs and economic opportunity in coming years. For example, it is among the first countries to permit only hydrogen-fueled motor vehicles – another wave of the future.

Other ongoing domestic priorities promote lifelong learning, retraining, and attracting foreign talents. The nation has fast become a magnet for multi-cultural expertise. By 2005, the country hosted some 6,000 multinational corporations.

Turning Adversity to Advantage: Making Do with What's at Hand

The nation's petro- and fine-chemical complex is the largest in the Pacific Rim. Making a "silk purse out of a pig's ear," this sprawling chemical complex was built on a rim of shoals, shallows and an archipelago of seven offshore islands that once posed a major shipping hazard. Now, those obstacles and annoyances have been transformed into a major asset connected to the mainland by causeways and bridges.

Singapore's outstanding seaport ranks consistently as the world's largest. Anticipating the enormous impending increases in modularized global shipping, the port boasts the biggest container port in the world. State-of-art seaborne traffic management systems are capable of tracking and guiding 1,000 vessels simultaneously in real time. Controlling "turn-around" time for loading/unloading has been refined to a fine art. The facility has become one of the most modernized, advanced and best managed seaport anywhere. In a period of time when international commerce is becoming the key driver of economic development these assets – especially considering the growing influence of Pacific Rim nations – is a prime asset.

Deftly capitalizing upon its Western familiarities, Singapore promotes itself as the "entry hub" for erstwhile Western nations into other Asian countries. Fully cognizant of the growing economic significance and prowess of China, Singapore holds itself out as an East-West crossroads and entryway into Asian cultures. In particular, as a springboard into its giant neighbor, China.

Whereas, China poses problems as a major transgressor of intellectual property rights, Singapore concentrates on protecting and safeguarding R&D. This girds the confidence of major world players.

Maximizing the value of its limited human resources, Singapore readily concedes lesser valued labor-intensive activities of producing products to its low-cost giant neighbor. After all, there's a much higher value-added human input that can be reaped. Accordingly, Singapore concentrates and capitalizes upon matters of the mind.

The tiny nation boasts no vast reserves of natural resources or cheap labor. Instead, efforts are premised upon something more appropriate to these times – the battle for technologically astute undertakings coupled with hi-tech oriented human resources. Specifically, the country's select targets involve capitalizing upon hi-tech, value added efforts and intellectual pursuits. Following the prime rule of "making do with what you've got," Singapore capitalizes upon knowledge. The list of accomplishments could go on at great length.

Erratum: Some Other Notable Accomplishments to Singapore's Credit Worthy of Note

Perhaps just as important as technological advance is Singapore's dedication to seeing that "nobody gets left behind." This benevolent totalitarian society provides important answers for dealing with less the fortunate and poverty-stricken. Social well-being sometimes tends to be overlooked or minimized in the sweep of the onslaught and rush inherent in single-minded determination to pursue economic progress. Without plunging into the details, suffice to state that this enviable accomplishment is extraordinary; particularly so, when considering that this tiny nation was engulfed in poverty not so many years ago.

Other less important pace-setting events, although marginal to the onrushing stream of economic accomplishments, are worth mentioning. Contending with other lesser problems, chewing gum was outlawed because discarded wads were considered a blemish and blight. On another far more serious plane, individuals involved with illegal drugs simply face the death penalty in that country. It comes as no great surprise that there's not much of a drug problem in the nation.

Singapore's Prime Ministers Lee Kuan Yew and Goh Chok Tong, along with President S.R. Nathan, have accomplished in the span of mere decades what lesser developed nations most everywhere else have been unable to realize over the course of centuries. The salient consideration implicit in Singapore's successes underscore the importance of coherent and integrated national planning. Singapore has impressively proved that an entire country can be literally catapulted into positions of enviable global leadership. What a great model of success. Singapore's story is one well worth examining, explaining and emulating.

This cursory review underscores that just because a nation is small, it shouldn't be overlooked. Nations don't have to be a giant to be economically advanced and prosperous. Accomplishing that feat requires foresight and a national will. And, that imperative is precisely what well-conceived visionary goal setting is all about.

Japan's Prototype Economic Development Successes

Japanese national planning stands as a late-20th century example of deliberate economic goal setting supported by specific strategies. Visionary planning requires specifying both promising long-term goals as well as strategies for realizing them. Japan's economic planning and policy primarily targeted potential high growth undertakings requiring long term development – termed "sunrise" sectors. In addition, more immediate or short term economic targets also were specified.

Japan's success story exemplifies the potential value of visionary leadership. It provides another notable example of national economic planning. Targeting prime economic targets with great growth potential drove Japan's national economic prowess to new highs. Japan's visionary thinking, goal setting and accomplishments catapulted the nation into prominent economic leadership positions.

Acknowledged for reaping enormous benefits by purposely and tirelessly pushing Japan into the economic forefront, is former Prime Minister Kakuei Tanaka (1918-1993). Intensive and high level Japanese long-range planning efforts commenced during the political prominence of Prime Minister Kakuei Tanaka. Tanaka's leadership in visionary planning gathered impetus during several prior Ministerial positions [notably, the Ministry of International Trade and Industry (MITI), as well as those for Finance, and Postal Service]; several terms as secretary-general of the Liberal Democratic Party; and long membership in the Diet (House of Representatives). Tanaka's early efforts in technology assessment included those of the Subcommittee of Technological Advancement of the Economic Council (1969-); Science and Technology Agency; and the Japan Techno-Economics Society. If ever there was a well-prepared political leader to undertake the ambitious task of setting course for a "ship of state" venture into the future, it was Prime Minister Tanaka.

Tanaka's visionary plans, published as a best selling book in Japan, also were widely circulated in English (Tanaka, 1973). Continuing these efforts, Japan's Minister of State for Science and Technology Policy, Iwo Matsuda, continues to pursue new five-year planning activities. The third five-year plan was launched during April 2006. Long-range planning is seldom a one-shot event. Continuity invariably requires constant tweaking and upgrading.

Japan parlayed assessment of science and technology visions into a grandiose strategy that guided and culminated in prominently positioning the country in economic sectors with huge growth potential. The structure of industry in Japan, the cultural mindset, and a vast range of government incentives and encouragement contributed to making Japanese firms among the most aggressive to focus and capitalize upon new technologies. A panoply of inducements supported and sheltered designated new technologies with major growth opportunities. Generous government supports, tax preferences and other incentives were provided to encourage investments in targeted sectors. R&D efforts received preferential tax treatment and write offs. Capital investments were accorded quick tax write-offs. Foreign trade competition was stifled to shelter nurtured sectors. Trade restrictions discouraged or even shut out foreign competitors, until a domestic base could be solidified. Science cities or centers were established to spearhead select technologies. In short, commercial interests and investors received powerful inducements, incentives and reassurances of continuing support. These assurances bolstered resolve to move ahead.

Infrastructure development to meet Japan's needs of expansive economic development was another prominent feature in Tanaka's overall plans. Inter-island bridges, along with enlarged and extended roadway grids were put in place. Seaports and airports were upgraded and enhanced. Utility capacities and grids were enlarged and improved. Communications were upgraded. Educational pipelines encouraged science and engineering. From top to bottom, vital undertakings, as well as supporting infrastructures, facilitated robust growth. Fully executed, those goals boosted Japan into a globally vibrant economic position, particularly during the 1980s. In the U.S., experts fretted that Japanese technological advances were overtaking and overwhelming the U.S. vaunted position. Sector dominances challenged or eclipsed vaunted U.S. dominant positions in a number of hi-tech areas.

Government policies bolstering "sunrise" industries included: micro-electronics, machine tools, computers, communications, robotics. Government planners also designated "new frontier" technologies, ones with longer term timeframes, including: advanced ceramics, nuclear power, non-oil energy sources, bio-technologies, and laser products. These new frontier technologies embrace prominent core competencies of the impending Big Five economic eras. Time will tell how sustained encouragement and support of new frontier technologies plays out.

Japanese economic planners, spearheaded by Prime Minister Kakuei Tanaka, also tagged so-called "sunset" industries, ones in substantial and inevitable decline. Rather than lending further encouragement and support for these waning activities, governmental programs were aimed at easing the economy away from such undertakings. Declining industries included: aluminum, cardboard, cotton and wool spinning, electric-furnace steel, ferro silicon (a steel alloy), fertilizers, shipbuilding, and synthetic fibers. Mature industries, such as those just enumerated, had been diminishing in economic importance for decades.

Precursor Jurisdictions and International Diffusion of New Concepts

The concepts of precursor jurisdiction patterns and international diffusion of successful new concepts and public policies apply equally well to economic development undertakings reviewed here. A growing cohort of nations – as well as local governmental jurisdictions – have embarked on economic development policy planning. Experiences gained provide a sounding board for measuring principles, policies, and progress.

In recent times, the "diffusion" of public policy decisions typically starts with Sweden, then spreads (in approximate order) to Norway, Denmark, Finland; then on into Western Europe, including Netherlands, Germany, Switzerland, France, U.K. – among others; and over into North America – U.S. and Canada. Other early adopters sometimes include Australia, New Zealand, Japan, Singapore, Iceland, some Eastern European nations, among others.

Economic development patterns typically, though not always, commence in advanced polities. Some nations are more aggressive than others in moving technologies into widespread commercial application. As positive experiences with something

new amass, others take heed and often emulate the proven successful undertakings. There is much to be learned from the experience of others. Not infrequently, hopeful nations not quite ready or up to the task of devising long range economic development goals strive to do so. Unfortunately, timing and circumstance are not always appropriate to the task.

Currently, devising and executing efforts to support the newly emerging hi-tech pillars of economic growth already is proving successful in a number of countries. A host of other nations – besides Singapore and Japan previously stressed here – have undertaken similar efforts. Sometimes the focus is limited to only one or more hi-tech targets. The growing list includes: Great Britain, France, Germany, Netherlands, Finland (National Technology Agency), Italy (Target Project on Biotechnology), Soviet Union, Poland, Czechoslovakia, Israel, Indonesia, Malaysia (National Biotechnology Directorate), Australia, New Zealand, Egypt, Mexico, the Philippines, Pakistan, Canada, and Ireland.

Careful examination of experiences amassed by this growing number of nations provides a powerful data base for assessing the "art of the possible" in economic development planning. The future is being created – in large measure, by unstinting efforts of planning ahead to put entire countries into the vanguard of creative economic development. As powerful success stories amass, the masses will follow.

Precursor Nations: Does Size Matter?

Some nations are so very small that few persons even know about them, let alone give them much consideration. International and cross-cultural comparisons often are limited by eliminating from consideration many small nation states considered too insignificant. Some small and obscure nations, not infrequently, do lead the world in being the first to blaze new trails.

Iceland, a tiny country populated by 296,737 persons (July 2005 est.), usually isn't included in globally significant comparisons. Yet, a good number of the world's important benchmark accomplishments originated there. The same could be said about a significant number of other nations. Look to Iceland for innovations, especially in bio-genetics. For example, the whole world is watching (and capitalizing upon) Iceland's commitments to genetic profiling of all its willing inhabitants. The purpose entails ferreting out genetic "flaws" and discerning disposing factors that lead to cures/corrective therapies. Such leading edge developments will help to shape Tomorrow.

Finland's current successes can be attributed to foresight planning that zeroed in on electronics and high-tech enterprise during the 1970s. In like manner, South Korea targeted reproductive technologies, genetics and cloning. Tabulations placing these modest-sized nations into global leadership positions provide powerful examples for other to follow.

Every nation moves at its own pace. Some countries may be able to skip over and bypass eras not suited to local capabilities and conditions. Singapore's scant 253 square miles of territory, for instance, does not have enough land to realistically target agricultural pursuits. This exemplary country bypassed most of the Big Four economic

undertakings and devoted its efforts to "hot pursuit" of the Big Five hi-tech sectors. Countries like Singapore demonstrate that it is possible to bypass ill-fitting and lack-luster sectors and "leap-frog" ahead to economic undertakings more appropriate to their situation and available resources – physical and human.

Recent stunning successes – such as those in Singapore and Japan, among other nations – have attracted attention and boosted interest in economic development policy planning. Conscious goal setting that directs and accelerates change is on its way to becoming common practice. Time will tell whether economic policy development becomes widespread.

Targeting Epochal Goals: Big Four and Big Five Economic Eras

Economic development has many levels and many targets. The focus here is leveled at how to identify and pursue epoch-changing economic pursuits. The end goal involves identifying and encouraging emerging economic activities that will dominate entire eras. The target dwells on clusters of economic activities that become so dominant and overshadowing that they come to characterize an era. The historical sweep of epochal economic development reveals patterns encompassing episodic economic stages characterized here as Economic Eras.

The great scaffolding of evolutionary patterns reveals three basic tiers: the past, where we've been; the present predicaments and positions; and, finally, the trends and trajectories toward possible and most probable outcomes. As the course of economic development wends its way, new sectors ascend. Answers to what the future holds come down to a matter of perspective and choosing from among alternative possibilities.

As older economic sectors mature, "yesterday's industries" wane and new sectors step in to fill the breach. Relative importance ebbs and flows between and among economic sectors. Previous economic linchpins wane as new centers gain predominance.

There is a series of dominant economic activities that periodically punctuate the course of global economic history. Successive waves of technological clusters covered here include the emerging Big Five and the Big Four. Each sector, in its own turn and time will become the economic mainspring of economies as societies progress along a continuum of change.

Economic undertakings constitute the central institutional structure upon which societies are built. These undertakings include the vital activities that generate financial wherewithal and draw humanity together in a socio-economic matrix. It is questionable to attribute any one factor the linchpin of society. Tagging economics in all its specialized undertakings as the mainstay, however, may not be an overstatement.

A number of epoch-setting economic activities already can be discerned or surmised with confidence and clarity. Identifying national goals is not always this easy. Interesting targets of opportunity abound. Tracking major economic eras in the U.S. reveals a progression from: agriculture (peaking in the 1880s); to an industrial base (peaking in the 1920s); to a brief interlude with a services-based economy (peaking during the 1950s); into a broadly construed communications-information-knowledge-education based economy (currently accounting for over 70% of GDP). Looming over

the millennium are at least a Big Five potential sectors that are most likely to dominate the socio-political-economic landscape: 1. Leisure (taking off around 2015 when 50% of every American's lifetime is likely to be taken up by such pursuits; 2. Life Sciences/Biotechnologies (acquiring dominance around 2100); 3. Meta-materials/Nanotechnologies becoming the linchpin undertakings 2200-2300); 4. a New Atomic Age (acquiring the lead between 2250-2500); and 5. a New Space Age (the most exciting adventure dominating prior to 3000).

The history of humanity traditionally is mapped and measured by a series of "Ages" or "Eras" through which various undertakings have provided the key economic activity and principal driver of change, advance and progress. In the beginning, the Stone Age dominated human activities for millions of years. In more rapid succession, came the Copper Age (6400 BC); the Bronze Age (3000-500 BC); the Iron Age (1700-51 BC); and the Steel Age (1800s). Broadly characterizing contemporary times, it might be fair to attribute an on-going succession of materials technologies: Plastics (1900s); Silicon (1950); Bio-materials (animate matter – around 2100); Meta-materials (inanimate matter – around 2200-2300); Atomic Matter (around 3000); and, perhaps, Anti-matter (around 3000, or later).

Basic Principles of Long-Range National Economic Planning

Predicting the future provides a powerful basis for creating it. This presentation dwells heavily on the "laws" and indicators of history. Timelines of basic principles and constructs reveal trends their direction and momentum that help sharpen perspectives on things yet to come.

Discussion presented here reviews the recent shift toward public policy targeting and actively promoting cutting-edge technologies holding promise for economic growth overall. Nations acting to gird their economic base strive to insinuate and accommodate new and promising growth sectors. The end goal is to build more productive and stronger economies that will advance entire nations and enhance the condition and fate of their inhabitants.

Economic development policy basically centers upon the predominant economic undertakings within political jurisdictions. Driven primarily by waves of scientific and technological invention, successive economic eras generate the dominant source of jobs. As a result, population centers emerge near those centers of economic activities. In turn, this prompts housing and a vast range of supporting services (utilities, roads, sewers, heath care, parks, schools, and so on) that become mutually dependent. Taken together, this skein of principal and allied or ancillary activities literally shape the dominant character of a given economic period.

Critical to "seizing the moment" is identifying and targeting high-tech opportunities that will be important to national well-being down the line. Mapping out visions and defining goals opens up opportunities for planning and building a better Tomorrow. Economic policy development, as a planning function, derives from and responds to prevailing predominant economic undertakings within political jurisdictions.

Visionary economic goals and national planning efforts help to speed up (or slow down) the pace of change. Visionary perspectives and goal setting provide the inspiration. Sizing up the political and psychological climates of opinion help to gauge support or disapproval. Execution measures success. Results depend on how well stewards and supporters understand, plan ahead, and execute essential steps that have been specified.

The art of the possible is the stuff of visions. Economic policy development, properly directed, can turn visions into reality. Core undertakings specify structures for plotting and managing the pace of oncoming projected – but yet to be realized – changes.

Detailing new economic prospects requires assessing crucial steps required if specified goals are to be realized. Perspectives developed from amassed experience helps guide decision makers to capitalize upon the positive prospects and avoid potential pitfalls. Focused in this manner, conscious direction can influence, speed up, guide and shape – if not actually determine – specified outcomes.

Leadership Roles In Visionary Economic Development Planning

Who or which institution are best equipped to decide whether or not to embark upon developing and deploying new technologies?

Rarely do political leaders have the resolve, tenure of office, and popular support to pursue distant future goals. Political leadership typically succumbs to the pressures and problems of the moment. Commitments to immediate situations leave little room for addressing long range visionary goals.

Some countries are more adept in utilizing high level blue-ribbon gatherings of experts to come up with serious visionary propositions and targets. Sweden's Royal Commission reports are exemplary. These undertakings are structured to reflect and represent viewpoints by experts representing most every important sector materially affected. Opportunities for additional views also are structured into the rigorous review process. It comes as no surprise that most of the new and novel concepts put forward in these Royal Commission reports are swiftly passed into law. Likewise, England's blue-ribbon Royal Commission reports, probably the most carefully thought out and technically proficient of any nation, almost always are right on the mark – intellectually. Unfortunately, while England's scholarship is superb and frequently unsurpassed, there tends to be a reticence and reluctance to swiftly implement new concepts. As a result, the track record of swift response falls somewhat short of hopes.

Political resolution, as used here, is cast in the broadest sense. It involves far more than government and bureaucratic efforts. Public policy deliberation and decision making is a far flung activity. "Political" gatekeepers include more than governmental officials charged with public policy decision-making. No single institution – including government planning authorities – can be successful without the support of others. Entrepreneurial and commercial interests play critical roles. The panorama of influences that determine outcomes of economic hi-tech developments covered here include inputs from the public and private sector.

The mechanics of pluralistic consideration are always at play. Increasingly, however, it is the various specialized institutions of government that are undertaking the task. Implicit in top-down proposals is the shift away from freely operating mechanisms of the marketplace. Visionary planning is tilted toward deliberate policy setting involving government-directed leadership.

Broad scale consensus, including formal as well as informal activities extending to all levels of society, is vital. All manner of institutional players are involved. Business leaders who help bringing economic targets into reality play vital roles. Somewhat more removed, although important to deliberations, are roles played by special interests stepped in the specifics of their specialized domains. Educational institutions, research organizations and think tanks of all kinds provide other useful inputs. Public attitudes supportive of on-going efforts also are important. Instead of being nobody's business, the gravity of these decisions makes determination, "everybody's business."

Some Basic Planning Principles

Defining important goals and mapping strategies for implementing them represent no small undertaking. Identifying new pillars of economic growth and potential prosperity that will dominate contemporary times, although not easy, is possible.

Selecting the key milestones for any national visionary project requires a great breadth of knowledge and the Wisdom of Solomon. In today's rapid pace of scientific and technological advance, just staying on top of one's field of interest is difficult enough. The history of science and technology is one of constant sub-divisions into fields that have become so specialized that only gifted insiders are capable of successfully integrating looming developments. Everybody has their own sphere of interests and expertise. Attempting to span the full range of activities that make up "national" goal setting poses overwhelming but manageable challenges.

Developing, deliberating and setting national economic goals pose a difficult enough undertaking. National goals are broad and pervasive, frequently requiring myriads of ancillary goals. For the paramount goal to succeed a range of considerations vital to underpinning success must be addressed.

The measure of success requires accomplishing the substance of visionary potentials. Goals must be realistic. Most important to such plans is specifying the implementing strategies for realizing set goals.

Rarely are massive undertakings accomplished in a single fell-swoop. Progress toward major goals is incremental. Successes prod constant striving to achieve the next step, and the next. It is the refinements, extensions, updates and elaborations – along with sidestepping, avoiding or otherwise subduing shortcomings or deficiencies – that often make an important difference.

Planning efforts often tend to set too many targets. It would be folly to target pursuing all the "hot" high-tech projects on the planning horizon. Embracing too many promising targets can be self-defeating. Overwhelming numbers of opportunities require sorting out.

Focusing on realistic opportunities that are "doable" is essential. Developing visionary goals starting from "scratch" – launching off into particle physics, for example – tends to be overly ambitious, at least for most nations.

Abstract and theoretical goals are fine – on paper or as a stage-setter. Spinning hopes about a "wild blue yonder" and "shooting for the stars" stand little chance of going anywhere, let alone succeeding. Hi-tech growth targets selected may not always work out. Public policy makers, however, retain the ability to stop, change direction, and start anew.

Though projections may be off target, the mere serious assertion of them can give rise to "self-fulfilling prophesies." Possible targets can take on a "life of their own." Once a goal is identified, continuing efforts devoted to realizing them may actually wind up keeping hopes high and bringing even the loftiest aspirations to fruition. The great futurist and thinker, Herman Kahn, once ensured me that "virtually anything that the mind can conceive, human beings can achieve."

Specifying concrete targets helps to move jurisdictions and institutions along toward slated goals. But that may not be enough to get the private business sector into high gear. Government assurances and commitments to economic policy targets, favorable tax considerations, seed money, and a host of government supports provide important incentives.

The hard part often involves securing consensus and enduring commitment. Beyond that is the formidable task of actually executing and implementing grandiose visions and plans. Orchestrating consensus on clearly defined realistic policies and programs and managing execution and successful implementation requires dedication and resolve. Great changes involving breaks with the past and entrenched mindsets are seldom easy to swiftly or fully realize.

The final arbiter may be the marketplace itself. If the public doesn't accept the proposed policies and programs, their fate may be sealed. Consumer support, at the end of the chain, is crucial to acceptance. New and novel products or services must be acceptable to the marketplace.

Advancing a given technology is limited by the accumulated fund of knowledge, the understanding that science provides, the skills of human competence in applying it all, and institutional arrangements for adopting and integrating the new. Practicality of planning efforts rests on capitalizing on assets at hand and finding ways to maximize their unlocked potentials.

Is Contemporary Economic Development Policy New?

Broadly construed, the idea of economic development probably has always been around. Only more recently has the need for designating key economic activities and marshalling resources to fulfill them taken on national and epochal dimensions. Francis Bacon (1561-1626), credited with developing scientific methodology based on observations and experimentation, conceived of a utopian civilization based on science and technology in his book entitled New Atlantis. Rene Descartes (1596-1650) advocated "critical rationalism" to build a better society.

Over a century ago, national economic planning attracted serious interest with Karl Marx (1818-1883). Marx maintained that every society, regardless of its relative historical stage, rested on economic foundations that shaped social, political and spiritual activities. Specifically, he asserted: "The sum total of these relations of production constitutes the economic structure...on which rise legal and political superstructures...The mode of production in material life determines the general character of the social, political, and spiritual processes of life" (Marx,1959, pp. 43-44).

Spearheaded by the USSR's State Planning Commission, numerous Five-Year Gosplans strove to reshape the nation. That country's State Planning Commission was established in 1921 to supervise the planning of economic objectives and translating them into specific plans. Although execution may have been deficient, long range planning on this scale marked a great stride forward in contemporary national government direction of major undertakings for an entire country.

Steven Vago synopsizes Marx's concepts revolving around the centrality of economic undertakings: "For Marx...The economic production is the substructure upon which the rest of society, the superstructure, is built. Social institutions – such as the government, the family, education, and religion – are dependent upon the mode of economic production in a given society. Variations and changes in economic production give rise to variations and changes in other social institutions with their associated values, attitudes, and norms." (Vago, 1980, p.41.)

Establishing and directing massive goals for political jurisdictions has overtones and potentials tending toward totalitarian despotism. Those propensities can be somewhat offset and blunted by consensus building, coupled with opportunities for intervention of popular inputs to provide course corrections and changes.

Turning Point: Post – WW II National Economic Planning

A turning point in national economic planning occurred during the Post – World War II reconstruction period (late-1940s) aimed at re-building "basic" infrastructures and sectors in nations decimated by the ravages of war. France's first "reconstruction plan" was drawn up in 1946 under leadership of General de Gaulle and supervision of Jean Monet. German reconstruction was well underway by 1945-46. Similar efforts toward national planning were underway in Great Britain in 1960, spearheaded by the National Economic Development Council (1961). Other national reconstruction efforts followed.

Only within the last 50 years have nations begun to seriously grapple headlong with long-term economic development potentials. Since the mobilization of World War II undertakings, the onus of actively pursuing development of massive and powerful new technologies has been undertaken and led by government. Multiple institutions – legislative, executive, judicial, and independent regulatory agencies – play important roles.

As an aside, economic development of a different sort, involving Third World or lesser developed nations came into vogue during the 1950s and 1960s. Author H. W. Arndt, asserted, "The term 'economic development' as denoting a process which societies undergo was hardly used before World War II, although the use of 'economic

development' in the sense of an activity applied, especially by governments, to a country's land and natural resources is at least a hundred years older" (Arndt, 1987, p.1). As an aside, it wasn't that economic development was not considered. It was. J.A. Schumpeter ascribed technology as the driving force in economic development creating "gales of creative destruction" outmoding and displacing earlier technologies (Schumpeter, 1911). Likewise, Nikolai D. Kondratieff described "boom and bust" long wave cycles carried along by echelons of technological advances, shortly after WWI. Legions of other scholars contributed to carrying such policies along.

Conscious Control: Taking Charge of Change

Policy planners increasingly turn to creating willed, not fated, futures. During the 1970s Robert Heilbroner asserted, "...The surrender of society to the free play of market forces is now on the wane...the pressures in the future will be toward a society marked by a much greater degree of organization and deliberate control" (Heilbroner, 1970, p.164). Many other prominent scholars have devoted huge efforts to advancing such concepts.

Economic development policy based on visionary thinking and planning holds enormous potential to enhance human conditions and change the destiny of entire economies. Directing development of promising new targets conferring major socio-economic advantages is becoming too important to ignore and let things drift along. When the stakes are high, decision makers tend to be less likely to remain hapless victims of haphazard and directionless change. No longer willing to stand outside the processes of change, instead, the best hope involves turning to more conscious and aggressive long range thinking and planning.

Correspondence

Graham T.T. Molitor
President, Public Policy Forecasting
6343 Saucon Valley Drive
Fayetteville, Pennsylvania 17222
USA
Email: gmolitor@comcast.net

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